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ABSTRACT

Volume 11 of the 19-volume Highway Safety Program Manual (which provides guidance to State and local governments on preferred highway safety practices) concentrates on emergency medical services. The purpose of the program, Federal authority in the area of medical services, and policies related to an emergency medical services (EMS) program are described. Program development and operations (EMS system functions and components, postadmission, State EMS program elements, and personnel training) are presented. Criteria and methodology for program evaluation and different types of reports (operational, management, program evaluation, and National Highway Traffic Safety Adminstration) are explained. Local government participation and funding criteria for 402 EMS projects are reviewed. Appendixes (one-half of the document) contains the Highway Safety Program Standard 11, Implementation Guidelines; a glossary of definitions; references; representative projects; resource organizations; the economics of ambulance service; materials on EMS helicopter use, personnel training, EMS systems, job descriptions, EMS planning, communications, advisory groups; forms or guidelines for regulating ambulance service, contracting for such services, and for use in emergency rooms; and a list of National Highway Traffic Safety Adminstration administrators. (NH)

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Highway Safety Program Manual

NO. 11

Emergency Medical Services

APRIL 1974

CE003894

U.S. DEPARTMENT
OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC
SAFETY ADMINISTRATION

HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 11

EMERGENCY MEDICAL SERVICES

This manual is designed as a guide for States and their political subdivisions to use in developing policies and procedural activities. Its contents do not negate any requirement found in Highway Safety Program Standard No. 11.

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FOREWORD

As part of the Highway Safety Program Manual, this volume is designed to provide guidance to State and local governments on preferred highway safety practices. Volumes comprising the Manual are:

0. Planning and Administration
1. Periodic Motor Vehicle Inspection
2. Motor Vehicle Registration
3. Motorcycle Safety
4. Driver Education
5. Driver Licensing
6. Codes and Laws
7. Traffic Courts
8. Alcohol in Relation to Highway Safety

*9. Identification and Surveillance of Accident Locations
10. Traffic Records
11. Emergency Medical Services
*12. Highway Design, Construction, and Maintenance
*13. Traffic Control Devices
**14. Pedestrian Safety
15. Police Traffic Services
16. Debris Hazard Control and Cleanup
17. Pupil Transportation Safety
18. Accident Investigation and Reporting

The volumes of the Manual supplement the Highway Safety Program Standards and present additional information to assist State and local agencies in implementing their highway safety programs.

The content of the volumes is based on the best knowledge currently available. As research and operating experience provide new insights and information, the Manual will be updated.

The volumes of the Highway Safety Program Manual deal with preferred highway safety practice and in no way commit the Department of Transportation to funding any particular program or project.

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*Administered by the Federal Highway Administration.

**Administered jointly by the National Highway Traffic Safety Administration and the Federal Highway Administration.

Many expert organizations and individuals at all levels of government and in the private sector contributed heavily in the preparation of the volumes of the Manual. The Department appreciates greatly this help in furthering the national program for improving highway safety for all Americans.

This volume is a complete revision of Volume 11 dated January 17, 1969 which is superseded and incorporates material from the following documents which are also superseded and cancelled: NHTSA Order 960-4 of February 26, 1971, "Supplement 1 to Volume 11," as well as "Change 1 of June 24, 1971;" "Change 2 of April 20, 1972;" and "Change 3 of October 10, 1972;" NHTSA Order 900-9 of January 9, 1973, "Certificate of Completion of NHTSA Training Courses;" OSDI Memo of April 16, 1973, "Emergency Room Surveys;" and TSP Memo of June 4, 1973, "Review and Approval of Comprehensive EMS Plans."

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 11 Emergency Medical Services	TRANSMITTAL 36
CHAPTER Contents	April 15, 1974

(42-01)

Chapter I. Purpose
II. Authority
III. General Policy
IV. Program Development and Operations
V. Program Evaluation
VI. Reports
VII. Local Government Participation
VIII. Funding Criteria for 402 EMS Projects

Appendix A Highway Safety Program Standard 11, Implementation Guidelines
B Glossary of Definitions
C References
D Representative Projects
E Resource Organizations
F The Economics of Ambulance Service
G The Use of Helicopters in Emergency Medical Services

H Outline of Material for Ambulance Personnel Training
I A Model Ordinance or Statute Regulating Ambulance Service
J Description of Selected Emergency Medical Services Systems
K Job Description Emergency Medical Technician - Ambulance and Sample Invitation for Applicants
L Sample State Act to Regulate Ambulance Services
M Sample Contractual Agreement for Ambulance Service
N Addresses of NHTSA Regional Administrators
O Emergency Medical Services Planning Outline
P Guidelines for Developing an EMS Communications Plan (To be published)*
Q Model Document for Establishing Advisory Groups
R Certificate of Completion for NHTSA/EMS Training Courses

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*When published this Appendix will provide an outline for a State Communications Plan. This plan will be prepared and submitted separately as Appendix F, "Communications Plan."

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 11 Emergency Medical Services	TRANSMITTAL 36
CHAPTER I Purpose	April 15, 1974

(42-01)

Par. I. Introduction
II. Purpose
III. Specific Objectives

I. INTRODUCTION

A. Many of those injured in highway crashes die needlessly or are permanently disabled because they do not receive prompt and proper emergency care. However, through the efforts of the NHTSA/EMS program more areas of the United States now have improved emergency medical services. In many areas there is now improved planning for emergency logistics, communications, and transportation facilities, and present services are improving management. Ambulance operators, drivers, and attendants are becoming more skilled in emergency care and are required in most parts of the country to carry adequate equipment in their vehicles. More hospitals and ambulances have radio or other direct communications links either with each other or with police radio communication systems. Helicopters are more frequently employed, and landing pads are becoming more prominent at an increasing number of hospitals throughout the United States. It is imperative that highway and other Emergency Medical Services* continue to be improved throughout the nation.

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*Throughout this document, the term "Emergency Medical Services" (EMS) connotes the complete system of emergency care provided for in Highway Safety Program Standard 11, including first aid given by bystanders; emergency care rendered by specially trained Emergency Medical Technicians or other personnel; and medical care rendered by physicians or qualified personnel under their direct supervision. Although the care rendered by laymen may be referred to under the term "emergency medical services," it is not implied that their care is medical in the professional sense.

B. The Highway Safety Act of 1966 was passed by the 89th Congress and approved by the President only after searching inquiry by the Senate and House of Representatives and considerable public discussion of the many important issues involved. Emergency medical services for persons injured in highway crashes was one such issue. In favorably reporting the Highway Safety bill to the House of Representatives, the House Committee on Public Works said:

> "When accidents occur, it is essential that every available resource be mobilized to save lives, lessen the severity of injuries, protect property, and restore the movement of traffic. An essential part of the State safety program should be the development of emergency facilities system. This will require the advice and services of experts and personnel in medicine, law, engineering, communications and law enforcement, at a minimum."*

II. PURPOSE

A. The purpose of an Emergency Medical Services (EMS) Program is to ensure that victims of traffic crashes receive prompt and adequate emergency care. Such a program involves a comprehensive EMS system which includes the necessary emergency equipment, manpower, and facilities.

B. The Department of Transportation (DOT) recognizes that EMS in support of the needs of highway accident victims represents only one of several demands placed on an EMS system. Therefore, there has been a serious attempt to design an EMS Highway Safety Program which assures States the degree of flexibility necessary to upgrade their total EMS system to serve these varied needs.

III. SPECIFIC OBJECTIVES

A. A comprehensive EMS system should have the capability to:

1. Provide prompt identification and response to crashes under a range of emergency conditions.

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*H. Rept. 1700, 89th Congress, 2d Session, p. 19.

2. Sustain and prolong life through proper first aid and emergency care measures, both at the scene and in transit.

3. Provide the coordination, transportation, and communications necessary to bring the injured person and definitive medical care together in the shortest practicable time, without simultaneously creating additional hazards.

B. Achievement of these specific objectives requires that each State undertake the following:

1. Comprehensive EMS planning.

2. Encouragement and active support in the development of cooperation by local governmental, private, and voluntary organizations in determining areas of responsibility, management of communications, dispatching emergency personnel and equipment, and effecting mutual support agreements between contiguous jurisdictions.

3. Development of performance standards and critiera suited to the needs and resources of each State.

4. Adoption of personnel selection, training, and licensing standards based on performance.

5. Adoption of equipment standards.

6. Periodic review and evaluation of Statewide emergency medical services to identify needed improvements, to establish action programs to help solve these needs, and to help meet requirements posed by Standard 11.

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 11 Emergency Medical Services	TRANSMITTAL 36
CHAPTER II Authority	April 15, 1974

(42-01)

Highway Safety Program Standard 11, Emergency Medical Services, which is contained inside the front cover of this volume, was issued by the Secretary of Transportation under the authority contained in Chapter 4 of Title 23, U. S. C. (hereinafter referred to as the Highway Safety Act of 1966) on June 27, 1967. Section 402(a) of Title 23 states that:

> "Each State shall have a highway safety program approved by the Secretary, designed to reduce traffic accidents and deaths, injuries . . . resulting therefrom. Such programs shall be in accordance with uniform standards promulgated by the Secretary . . . such uniform standards shall include . . . emergency services."

This standard also appears in Appendix A with mandatory implementation guidelines listed for each part of the standard.

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 11 Emergency Medical Services	TRANSMITTAL 36
CHAPTER III. General Policy	April 15, 1974

(42-01)

Par. I. Introduction
II. Policies
III. Questions and Answers

I. INTRODUCTION

A. It is the general policy of the Department of Transportation (DOT) that emergency medical services should be available in each State to assure that prompt and adequate emergency care is administered to all individuals in need of such care.

B. Although DOT recognizes that each State must itself determine the level and types of emergency medical services to be established within its jurisdiction, it urges States to analyze carefully the level and type of services currently provided and be constantly alert to potential improvements in the State program that will help in reaching the national goal of minimizing disability and saving human life.

II. POLICIES

The following are specific policies of the DOT relative to the EMS program:

A. Factors such as population, population densities, population dispersal, topography, miles of highway, existing emergency medical services, and financial resources suggest that each State must determine the specific objectives of its own EMS program. The establishment of these objectives is prerequisite to the development of a Statewide EMS program plan.

B. Each State should evaluate existing State laws and regulations relative to Highway Safety Standard 11 and undertake a survey of existing EMS systems operations prior to establishment of their specific EMS objectives.

C. State EMS objectives should be established with maximum participation of those organizations and individuals who will be depended upon to meet them. This should include all EMS resources in the State, both public and private.

D. Statewide EMS should be viewed as a public utility or service subject to certain requirements and regulations which may even include public management and State technical and financial assistance.

E. Provision of EMS should not result in destructive competition; franchising should be considered in each response area to the extent required to help meet overall Statewide objectives. Private services should be viewed as a part of the total EMS resources and included in the process of system development and upgrading.

F. Agreements specifying jurisdictional responsibilities and interjurisdictional assistance should be encouraged.

G. Effective channels of communication should be established between State and local EMS officials (including private and voluntary organizations) for purposes of technical assistance and reporting.

H. Local EMS policy committees should be established to support development of State EMS plans and programs at the community level.

I. Federal funds will not be used for designing or developing new training courses for ambulance drivers and technicians when such courses have already been developed and made available by DOT.

J. Federal funds will not be used for designing or developing new survey forms or questionnaires for determining State and community EMS resources.

K. Insurance coverage should be provided for vehicles and personnel in accordance with applicable State and community practice.

L. It is imperative to include emergency medical care training for dispatcher personnel. In this regard, a competence in the medical vernacular associated with medical emergencies is considered mandatory for effective functioning. This competence is also considered vital for law enforcement officers, firemen and others whose duties bring them in frequent contact with medical emergencies.

III. QUESTIONS AND ANSWERS

The following are frequently asked questions about the DOT/EMS program. The responses constitute the policy relating to the subject matter of the question.

- What requirements does the Highway Safety Act place upon the States?

  The Highway Safety Act of 1966 requires that States have a highway safety program developed in accordance with uniform standards promulgated by the Secretary of Transportation. Standard 11 entitled "Emergency Medical Services" broadly outlines the elements of content required in that part of a State's program. The purpose of this standard is to improve the lifesaving capability of emergency medical services through personnel training, proper equipment, communications, operational coordination, and comprehensive planning at both the State and local levels.

  Pursuant to the above, additional mandatory guidelines were published in Supplement 1 to Volume 11, "Emergency Medical Services," of the Highway Safety Program Manual, with changes. This Supplement made reference to the Ambulance Design Criteria which is a mandatory guideline. These were developed and published for amplification and clarification. This was also done to ensure that the best known resources—knowledge, techniques, and equipment—were being brought to bear on the victim of an emergency. The Supplement 1 guidelines have been incorporated in this volume in Chapters IV, VIII and Appendix A.

- How does Federal funding apply to the program?

Section 402 of the Act provides funding assistance to States for the conduct of their highway safety programs. These funds may be used for political subdivision emergency medical services projects within the framework of an overall State highway safety program, which encompasses all eighteen areas of highway safety covered by Federal standards. Project application by a political subdivision under Section 402 must be made to the State to be considered for inclusion in the State program. Direct assistance to political subdivisions is not possible, since all funds available under this section of the Act are apportioned for use by the States. Details on this potential source of aid are available through the Governor's representative for highway safety.

- Does the Federal Government specify types of ambulance services?

In providing general guidance to the States relative to implementation of Standard 11, the Department of Transportation recommends that the availability of such service be of equal concern to local government as other municipal services, such as fire and police. The provision of emergency medical services is essentially a local or community matter, and the Highway Safety Act does not insert the Federal Government into a role of specifying what type of ambulance service should be provided—commercial, volunteer, or governmental. The intent of the Act, however, is to upgrade emergency medical services nationwide, leaving the particulars of local operation at the community level where needs can best be determined.

- Should different guidelines apply to rural and urban areas?

The quality of service rendered to the victim of an emergency must not be a variable, subject to negotiation from community to community. The guidelines that have been published are considered minimal and appropriate for all who render emergency care. It does not seem practical to make exceptions and deprive some of lifesaving and life-sustaining care merely because they happen to live in a small community. Highway death rates in rural areas have exceeded those of the urban areas by 70 percent. Trauma centers and emergency rooms are of little value to the victim who has expired due to lack of proper care at the onset of the emergency or in transit to the facility. Quality of service rather than speed in transit is being emphasized.

- What has been the status of ambulance service?

This has been a variable with a number of urban areas having had service which was quite good although perhaps sometimes lacking in training for lifesaving and sustaining care. Many sections of the country have been, and are, dependent upon ambulance service that provides, almost exclusively, a transportation service with little or no victim-care capability.

There has been a nationwide trend toward discontinuance of ambulance services by funeral directors predominately for economic reasons. Although this economic condition developed over some period of time, it was made more acute by the enactment of the Fair Labor Standards Act and Medicare, both prior to the Highway Safety Act. The goal of the Department pursuant to the Highway Safety Act and the Emergency Medical Services Standard has been to upgrade and professionalize the ambulance field, enhance its life-sustaining quality, and encourage its establishment where it does not now exist. The program, however, is the Governor's responsibility.

- What has been the Department's view toward upgrading?

With regard to upgrading, it is the view of the Department that the ambulance attendant or technician does not properly fall into the category of unskilled labor as has tended to be the practice. Rather, this should be a person highly trained and skilled in both lifesaving and life-sustaining techniques. For this reason, it is believed that the status of the ambulance attendant should be accorded as much consideration as that of the barber, beautician, or plumber relative to training and licensing. To support such a service capability, a list of essential equipment for ambulances was drawn up by the American College of Surgeons. This list of equipment is minimal, but considered essential to support the lifesaving and life-sustaining procedures referred to above. With the assistance of the National Academy of Sciences and Dunlap & Associates, a Basic Training Course (81 hour) was developed along with a Refresher Course. A job description was developed at this time in conjunction with medical authorities. A Communications Manual and Dispatcher Training Course have been developed and published. All of the above are available. An Extrication Course has been developed, and an Advanced Course (480 hour) is being pilot-tested. Additionally, a committee of professionals from the fields of medicine, safety, industry, engineering, human-factors psychology, ambulance services, and others, developed the Ambulance Design Criteria which is published and also available. This document has been translated into Federal Specifications in a joint effort between DOT and the General Services Administration.

- What is the Department's position on State EMS legislation?

In view of widespread national deficiencies in emergency medical services, it seems incongruous to think of upgrading the basic provisions of State legislation or other forms of requirement or to evade enactment of legislation which sets out to ensure adequate emergency ambulance service for the sick and injured. The intent of the Highway Safety Act is to upgrade ambulance service nationwide by improving training, organization, and equipment. For example, DOT views licensing and certification as appropriate tools for a State to use to ensure that a desired level of competence is both achieved and maintained in this very significant field of human service and concern. The Department finds it difficult to believe that the seriously ill or injured person is interested only in rapid transit at a time when his life is ebbing away but could be sustained with proper care. There is a need to preclude avoidable death and permanent injury either at the scene, in transit or upon arrival at the hospital.

- Is there a requirement for States to develop a Comprehensive EMS Plan?

In accordance with Section VII of the standard, States must develop a comprehensive plan which, among other things, identifies resources, deficiencies, area characteristics and exhibits programmed implementation and standards achievement. An outline has been provided to the States to develop this plan. See Appendix O.

- Can Federally-funded ambulances be leased to private ambulance companies?

  The following sets forth policy relative to the leasing of ambulances, obtained by political subdivisions with Federal funds, to a private ambulance company and limitations relating thereto.

  Regarding leasing, a political subdivision may lease a vehicle (ambulance) purchased with Federal funds to a private ambulance company for specified services to be performed by the company. Title to the vehicle would remain with the lessor.

  As to limitations, these would be dependent upon the agreement for service as set forth in the contract between the political subdivision and the private company. Once the vehicle is leased to the company, it becomes a part of the company's fleet and may be used in the ordinary course of the company's business. The company's obligation to the lessor would be determined by the contract for service, and it is assumed that the additional vehicle would insure the company's ability to satisfy the contract for service, irrespective of the vehicle used. It would be expected, however, that the leasing company would meet the standards for service—training, vehicles, equipment, availability—set forth by the leasing agency, whether using the leased vehicle or another. It is not necessary to restrict the leased vehicle to only those calls which satisfy the contract for highway-related responses, so long as that vehicle and personnel which do respond satisfy the standards set forth by the contracting governmental agency. Appendix M to Volume 11 (Emergency Medical Services) of the Highway Safety Program Manual entitled "Sample Contractual Agreement for Ambulance Service" provides a guide to development of such an arrangement.

- An extrication course was mentioned. Is extrication by ambulance attendants being advocated?

  The States have been provided a list of access and extrication equipment that should be carried by an ambulance if a rescue vehicle does not accompany an ambulance on every accident call. The list of access and extrication equipment is identified by the American College of Surgeons in their May 1970 Bulletin. Ambulances are being required to provide space for this equipment. While it is considered preferable that someone other than an emergency medical technician (EMT) be trained and equipped to perform the actual extrication work, this cannot be counted upon in all parts of the country.

- Can State and county institutions be treated as political subdivisions in this program?

State or county institutions cannot be considered political subdivisions. Rather, they must be treated as agencies of the particular level of government to which they are subordinate and from whom they receive their support. Therefore, a State University could be provided funds to expend for highway safety as an agent of the State Government. The funds so expended could not be credited to the 40 percent allocation of funds required by the Act to political subdivisions.

On the other hand, a county hospital could spend highway safety funds as an agent of the county and these funds could be credited to the State's 40 percent allocation to political subdivisions.

- Can 402 funds be used for survey/inventory of emergency rooms throughout the State under the NHTSA/EMS program?

Response to this question must be made from the standpoint of the basic purpose of the survey and/or inventory. If the purpose is to make an in-depth analysis of numbers, distribution, and capabilities to support a program of development and upgrading, then the matter is out of the realm of NHTSA cognizance and support. On the other hand there is an interest in emergency rooms on the part of the planners for emergency care and transportation of the sick and injured. There is a need here to know in more general terms—the locations, distribution, and capabilities of hospital emergency rooms. To this extent, there is an NHTSA interest.

Therefore, it can be concluded that any NHTSA/EMS planning must take cognizance of emergency room existence as to numbers, locations, and service capabilities to achieve EMS system development. Any survey and/or inventory which sets out to tabulate emergency care and transportation resources may also include a tabulation of emergency room information to the extent alluded to above. This is viewed as appropriate and supportable in order that the NHTSA/EMS planner has a clear understanding of his problem which is specifically emergency care at the scene and transit to an emergency room.

- A requirement was stated for the development of a State Comprehensive EMS plan. What is the sequence of events this must follow for approval?

  The sequence of events followed on the Comprehensive EMS Plan is basically the same as for all other highway safety program plan development. FIRST - the plan must be developed and, of necessity, satisfy appropriate State authorities as to adequacy of content and completeness. SECONDLY - this document, with evidence of State approval, is then forwarded to the Regional Office where initial Federal review takes place, with comments and recommendations being made preparatory to final approval. FINALLY - the document is forwarded to national headquarters for technical review, appropriate comment and/or recommendation, and reconciliation of any remaining issues prior to final approval by the Regional Administrator.

- What 402 funding restrictions and deadlines may be applied to EMS plan development by NHTSA and how may these be administered by the Regional Administrator?

  NHTSA may set deadlines for total plan submissions or for portions thereof and also establish funding restrictions relating thereto. Relative to any deadline and restrictions established by TSP Order, it is the prerogative of the Regional Administrator in any appropriate case to judge the extent to which extenuating and mitigating circumstances justify continued funding beyond the deadline and restrictions while plan-development progresses to final approval. The view is held by NHTSA that in any case, funding for EMT training and related ACOS equipment should continue for the benefit of continued program development. This in no way is to suggest that the urgency and critical need for Comprehensive EMS Plan development for proper Standard implementation is in any way diminished or degraded—nor is the plan to be unduly delayed for spurious reasons.

- It is recognized that a program for implementation of the standards published under the Highway Safety Act of 1966 as amended is the responsibility of the Governor. Does this legislated mandate for responsibility and action extend beyond the Governor or those directly responsible to him?

  The provision in the Highway Safety Act of 1966, as amended, that the Governor shall be responsible for administration of the program was not a unilateral mandate but, rather, a mandate to the State. Consequently, all pertinent parts of the State Government, as well as the citizenry of the State, are included in having responsibility under the mandate from Congress to carry out the program. Therefore, the actions or inactions of any one of the above can bear favorably or unfavorably upon the State's total program effort and subject the State to either commendation or censure. We do not believe that Congress intended to limit the actions necessary for the State to implement the program to only those under the direct control of the Governor. The legislature, for example, shares responsibility for the program with the Governor. In the Department's view the failure of the legislature to enact essential legislation represents a decision by the citizens of the State, through their elected representatives, not to implement the program and, therefore, to accept reductions in Federal funds. Therefore, it is imperative for the whole of the State to assume responsibility for assuring an effective and total highway safety program. This includes timely implementation of program elements required by the national standards.

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 11 Emergency Medical Services	TRANSMITTAL 36
CHAPTER IV. Program Development and Operations	April 15, 1974

(42-01)

Par. I. Introduction
II. EMS System Functions
III. EMS System Components
IV. Postadmission
V. State EMS Program Elements
VI. Personnel Training
VII. Miscellaneous

I. INTRODUCTION

A. Improvement in existing EMS systems is essential if the goals of minimizing fatalities and decreasing the consequences of injuries on the nation's highways are to be met. Responsibility for the provision of emergency medical services in many communities often lacks coordination and results in a fragmented, ineffective EMS system. This lack of coordination and central responsibility for EMS contributes to unnecessary suffering and even death to victims of crashes.

B. The proper relationships between the various services and agencies commonly involved in EMS situations, i.e., rescue agencies, ambulance services, hospital emergency departments, and law enforcement, should be established to ensure that all of the resources necessary for prompt application of definitive medical care to injured persons are activated. Communications is a vital element in making such resource management possible. A variety of approaches can be taken at the State and local level to develop a coordinated and effective EMS system, provided all of the required functions are given adequate consideration.

C. In establishing a viable EMS system, private, volunteer or municipal systems may be considered.* The most practical approach will depend upon several factors including:

1. Economic feasibility of operation by private enterprise.
2. Geography and size of area.
3. Capabilities of existing institutional resources, e.g., police, fire department, hospital, etc.
4. Population distribution.
5. Possibility of volunteer resources, e.g., funds, manpower, donations, etc.

D. The interrelationships between the EMS system functions and supporting components are illustrated by Exhibits I and II. Exhibit I describes a simple highway crash incident where single vehicle, injury, and ambulance interrelationships are described in sequence and the corresponding functions identified. Exhibit II deals with a more complex accident involving multiple vehicles, injuries, ambulances, and hospitals. Reference will be made to these figures in describing the EMS system functions and supporting components.

II. EMS SYSTEM FUNCTIONS

A. The sequence of functions commonly associated with the EMS system**, illustrated in Exhibit III, are as follows:

1. Detecting and locating the incident.
2. Reporting the incident.
3. Dispatching ambulances and public safety vehicles and altering emergency care facilities.

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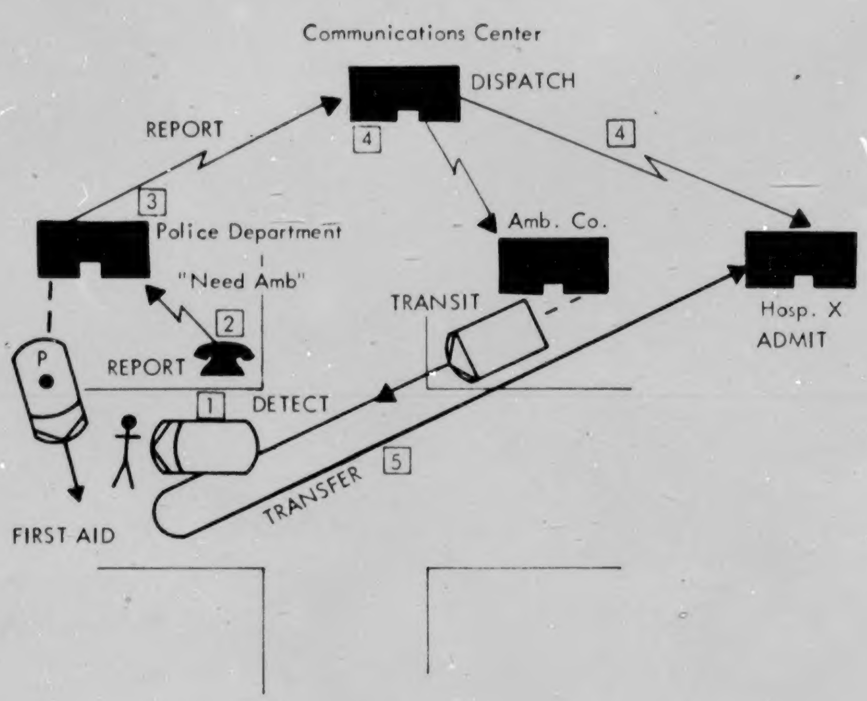
*Appendix J lists selected EMS systems which may be adaptable for local use.

**Sometimes the same function is provided by more than one component. For example, first aid may be given by a "passerby" who first detects an injury and by a law enforcement officer who commonly arrives next at the scene.

EXHIBIT I

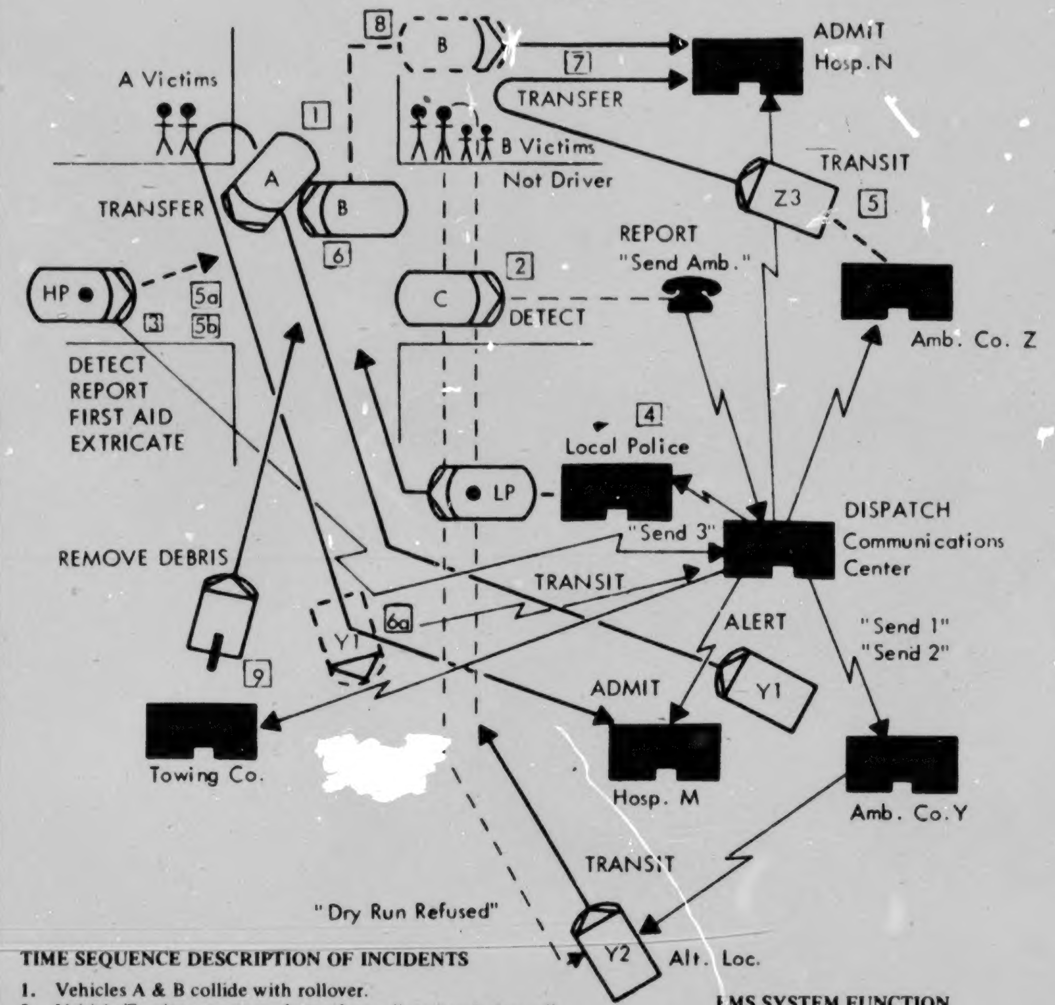
SIMPLE INCIDENT


Communications Center
DISPATCH
REPORT
4
4
3
Police Department
"Need Amb"
2
REPORT
P
1
DETECT
Amb. Co.
TRANSIT
Hosp. X
ADMIT
5
TRANSFER
FIRST AID

TIME SEQUENCE DESCRIPTION OF INCIDENTS	EMS SYSTEM FUNCTIONS
1. Pedestrian and vehicle collide.	
2. Driver calls police, "Accident, need ambulance."	Detection & Reporting
3. Police notify communications center and dispatch patrol car.	Reporting & Dispatching
4. Comm. center dispatches ambulance and notifies hospital.	Dispatching
5. Ambulance personnel render emergency care and transfer and admit to selected hospital.	Emergency Care, Transfer & Admission

EXHIBIT II

COMPLEX INCIDENT

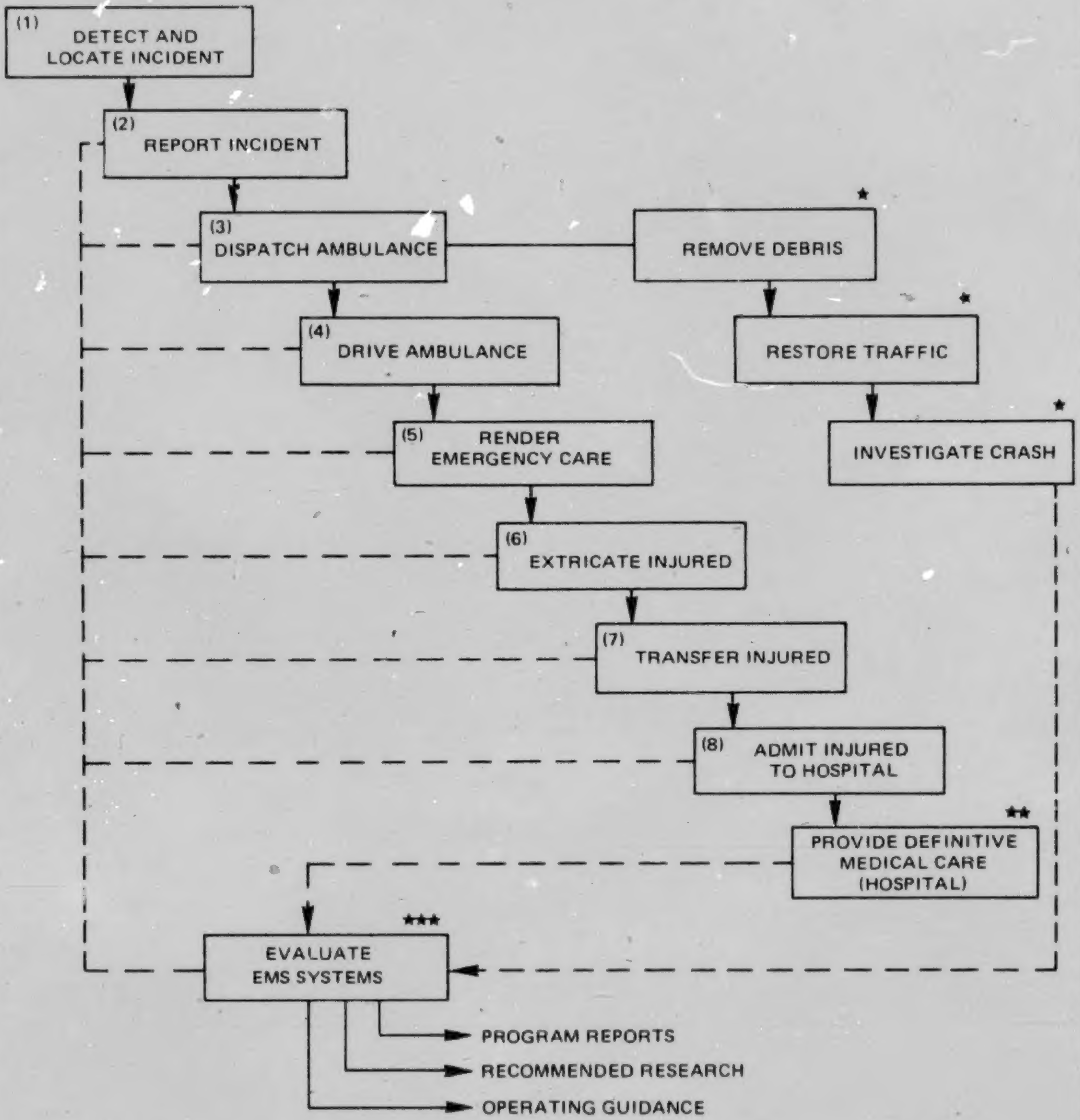

8
B
ADMIT
Hosp. N
7
TRANSFER
A Victims
1
B Victims
Not Driver
A
B
TRANSFER
TRANSIT
Z3
5
REPORT
"Send Amb."
6
2
HP
5a
3
5b
C
DETECT
Amb. Co. Z
DETECT
REPORT
FIRST AID
EXTRICATE
4
Local Police
LP
DISPATCH
Communications
Center
"Send 3"
REMOVE DEBRIS
TRANSIT
6a
Y1
ALERT
"Send 1"
"Send 2"
9
ADMIT
Y1
Towing Co.
Hosp. M
Amb. Co. Y
TRANSIT
"Dry Run Refused"
Y2
Alt. Loc.

TIME SEQUENCE DESCRIPTION OF INCIDENTS

		EMS SYSTEM FUNCTION
1.	Vehicles A & B collide with rollover.	
2.	Vehicle C, witness, proceeds to phone, "send ambulance."	
3.	Within minutes, highway patrol (HP) "finds" accident – six victims, radios comm. center for 3 ambulances.	Detection & Reporting
4.	Comm. center has already dispatched local police (LP), one ambulance (Co. Y).	Detection & Reporting
5.	After HP call, comm. center dispatches 2 more ambulances from two different companies (Y has one left, so Z is called in).	Dispatching
5a.	HP aids victims A & B.	Dispatching
5b.	LP arrives and aids other B victims.	
6.	Ambulance Y1 arrives, completes emergency care, extricates victims and begins transfer.	First Aid First Aid
6a.	Ambulance Y1 requests alerting of Hospital M.	Emergency Care, Extrication, & Transfer
7.	Ambulance Z3 takes 2 B victims to Hospital N (Driver B insists) and requests alerting of Hospital N	
8.	Ambulance Y2 is refused by Driver B who drives 2 B victims to Hospital N.	Transfer
9.	Debris removal equipment dispatched if not already at accident scene.	

EXHIBIT III

SYSTEM FUNCTIONS AND PROGRAM EVALUATION RELATIONSHIPS


(1) DETECT AND LOCATE INCIDENT
(2) REPORT INCIDENT
(3) DISPATCH AMBULANCE
REMOVE DEBRIS ★
(4) DRIVE AMBULANCE
RESTORE TRAFFIC ★
(5) RENDER EMERGENCY CARE
INVESTIGATE CRASH ★
(6) EXTRICATE INJURED
(7) TRANSFER INJURED
(8) ADMIT INJURED TO HOSPITAL
PROVIDE DEFINITIVE MEDICAL CARE (HOSPITAL) ★★
EVALUATE EMS SYSTEMS ★★★
PROGRAM REPORTS
RECOMMENDED RESEARCH
OPERATING GUIDANCE

Numbered functions (1 through 8) pertain to the EMS System

★ Accident related functions
★★ Past EMS care
★★★ EMS program responsibility

4. Driving ambulance(s) to the crash scene.

5. Rendering emergency care to the victims.

6. Extricating victims from the damaged vehicles, if required.

7. Transferring injured persons to the hospital and administering emergency care while en route.

8. Admitting the injured to the emergency department of the hospital.

B. The following paragraphs describe these typical functions in further detail.

   1. Detect and locate incident.

      a. A highway crash may be detected by a passing motorist, a law enforcement officer, a maintenance patrol, or a roadside observer. However, prompt detection of crashes is often delayed on rural and low-use roads and on major highways during periods of light traffic. In many urban areas, air patrols of major highways are becoming common and provide prompt detection and reporting of highway crashes, particularly when they restrict or block traffic flow.

      b. On rural or seldom-traveled roads, a partial solution to the detection problem is to alert travelers to look for off-road crash signs, such as broken guardrails, skid marks leading off the road, etc., so that detection delays of such crashes will be minimized.

   2. Report crash.

      a. Ideally, crash reporting should immediately follow detection. This is accomplished when the reporting source has nearby access to either telephone or radio communication and knowledge of whom to call for assistance. Roadside communication instruments should either directly connect with EMS dispatchers or have instructions on how to reach the nearest EMS dispatcher. On some urban area highways, the combination of frequent patrols by radio-equipped vehicles and centralized communication support and dispatching facilities ensures prompt reporting of highway crashes. Many areas, and particularly rural areas, have much less capability for accident reporting.

b. Advanced highway reporting systems include roadside telephones. In one State they are free and spaced at 1/2-mile intervals along each side for 55 miles; each telephone is connected to a State Police substation; each costs approximately $950 per instrument to install and has a monthly rental rate of $15. Sections of a perimeter highway around a major city are using emergency "push-button" signal boxes at regular intervals that signal for police, maintenance, and fire control response. Operating results to date indicate that voice call facilities are more satsifactory and may be less expensive if reasonable amortization is considered.

c. The universal telephone number concept combines the management of response resources and a single area wide telephone number to these resources. It provides the means to promptly report incidents and to summon assistance. The telephone industry has recently made the number "911" available for this purpose and progress is being made to implement its use nationwide. Lacking this, emergency numbers for each jurisdiction should be prominently displayed on each telephone. Visual signs are frequently a significant factor in facilitating prompt highway crash reporting. Signs should clearly indicate directions to nearest telephone. Portable signs carried by motorists for display on their vehicles which indicate the nature of the emergency, i.e., "need medical aid," "need mechanical aid," etc., are helpful in securing roadside assistance from both passing motorists and air patrols. An open hood or a white flag on the antenna has become recognized as a signal indicating a need for assistance.

d. There are approximately 300,000 citizens, nationwide, who have two-way radios for private and/or commercial use. Many of these are mobile units used on the highways and a number of organizations have been organized to use this potential in lifesaving and law enforcement. Among these are REACT (Radio Emergency Associated Citizens' Team) with 50,000 members in 1,600 teams; HELP

(Highway Emergency Location Plan) sponsored by the Automobile Manufacturers Association, with several thousand members concerned primarily with assisting motorists; and CRW (Community Radio Watch) sponsored by Motorola, which claims 250,000 members in 20,000 business organizations in more than 300 cities. These citizen-operated radios offer a potential in alerting authorities about highway crashes and require only good organization to be effective.

e. States and jurisdictions should first consider optimizing existing resources for crash reporting, including the interconnection of existing communication networks and areawide standardization of emergency call procedures. The traveling public should be indoctrinated in the vital role they can play and the obligation they have in reporting highway crashes. Roadside telephones (or radios) should be considered for installation in convenient, well-marked places.

3. Dispatch ambulance.

a. Dispatching may range from a complex communications center controlling police, fire, and other emergency functions to the handling of emergencies as a collateral duty by a local public safety agency. There are numerous operating examples which show that central dispatching and control of emergency operations such as EMS result in improved service and are generally more economical. In areas lacking central dispatching, confusion, duplication, and poor service typically result.

b. Before establishing a central dispatching facility the various organizations involved must agree to abide by central control and coordination. After there is general agreement, the communication ties, physical center, and operating procedures can be established to serve the entire community.

c. In addition to sending the ambulance(s) to the crash scene, the dispatcher should be trained to elicit medical information and be prepared to alert law enforcement, fire, and debris control personnel, if necessary. Each dispatcher should be connected by direct line telephone to the area's hospital emergency departments so that the most appropriate hospital can be selected and this information relayed to the ambulance driver. (Appropriateness of a hospital includes its ability to best handle the specific medical problems posed as a result of the particular crash or other situations to which a response is being made.) This action will initiate medical preparations prior to ambulance arrival. The dispatcher should also be able to provide a direct connection between the ambulance and medical personnel in the receiving hospital if medical advice is needed while en route.

d. EMS dispatching can be done in many ways.

   1) In many large cities the dispatching is done through the fire or police departments, particularly when emergency calls terminate at police or fire communication centers and these agencies also operate ambulances.

   2) In one large county with multiple urban centers, private ambulances under county contract are dispatched by the county dispatcher on emergency cases.

   3) In another large densely populated county one ambulance company has the franchise for the entire county and operates its own dispatching center in close cooperation with fire and police dispatchers.

   4) Since EMS systems support the community medical function, some dispatching centers are being collocated with hospitals. In many cases, emergency care aspects are likely to be improved by such collocation.

   5) Command and control of the ambulance as opposed to strictly dispatching means that definitive instructions are provided to the ambulance by radio directing its movement and the actions of the emergency medical technicians.

4. Drive ambulance.

Usually a dispatcher, particularly one operating from a centralized facility, can provide special instructions to minimize driving time to the scene. It is important that current street maps of the area served be available to the dispatcher. In urban areas street change reporting procedures should be established to provide current routing information to the dispatcher. Each ambulance driver must be familiar with his area of operations. In remote areas it may be desirable for residents to supply detailed location instructions in advance for use by the ambulance driver. Certification of each driver for such knowledge is recommended.

5. Render emergency care.

   a. Early and proper emergency care at the scene can reduce mortality. However, in many cases even the most responsive EMS system may not permit ambulance technicians to reach the scene in the first few minutes after a crash occurs. Therefore, first aid in the initial critical minutes may be given by those first on the scene. Public education programs, such as the American Red Cross program, "First Aid on the Highways," may make a valuable contribution in this regard. Properly trained ambulance personnel will initiate emergency care measures when they arrive.

   b. The question of the nature and amount of treatment that can be given by ambulance technicians is being redefined by the medical profession, since this is directly related to the level of training to be given and the type of equipment to be carried. The minimum ambulance crew should be two persons, each with adequate training in emergency care.

   c. Sending one or more physicians to the scene of severe highway crashes should be considered, to supervise the sorting and handling of victims by emergency care personnel. This is often done in connection with industrial and natural disasters. Air transportation may be feasible in some circumstances.

   d. Properly constituted "Good Samaritan" laws should be considered to protect persons giving first aid against unwarranted lawsuits. This should be done in concert with public education emphasizing the value of "Good Samaritan" actions.

e. All persons who may be called upon to render first aid in line of duty, other adults, and school children should be given opportunities to learn the fundamentals of first aid. The American Red Cross "Standard Course" and the U. S. Public Health Service "Medical Self-Help" training course are both suitable for this purpose.

f. The emergency medical technician ambulance (EMTA) should be trained and provided with the necessary communications link to act as the physician's surrogate. The level of care provided by the EMTA will vary depending on the circumstances and interpretation of the "State Medical Practices Acts" in the area. The communications link enables the physician to remotely provide medical advice.

6. Extricate injured.

a. Appropriate tools must be available to gain entry in the event vehicle doors do not open.

b. First aid and/or emergency care may be necessary in severe injury cases prior to removal of the victim(s) from the vehicle(s).

c. There are numerous instances of victims suffering permanent disablement or death primarily from spinal cord damage resulting from improper removal from wreckage. Thoroughly trained ambulance and rescue squad personnel should be able to recognize situations which require special techniques and equipment before removal can be attempted. Specialized equipment (such as backboards) has been developed for removing spinal injury cases and should be carried in each ambulance. In addition, portable fire control equipment should be carried for fire suppression during extrication of the injured.

d. Removal of the injured from the wreckage should be accomplished by passersby or police only under extreme conditions.

e. DOT is assessing and evaluating extrication methods and equipment in a study to recommend improvement.

7. Transfer injured.

   a. En route communications are vital for notifying ambulance personnel of proper destination hospital and for obtaining medical advice.

   b. The dispatch center should coordinate hospital selection, at least in serious or critical cases, based on medical advice and on the location and status of available hospitals. In a number of cities all major hospital emergency departments are on a "party" hot line and can be queried simultaneously. The dispatcher should direct the ambulance to the selected hospital and then inform the hospital of the inbound cases and their condition.

   c. The ambulance technicians will frequently require medical advice from an emergency department physician while en route. This should be provided by relay or radio "patch" through the dispatcher, or radio from abmulance to hospital. Proper on-scene stabilization and en route care will usually reduce the necessity for speed en route to the hospital and greatly enhance patient comfort. Gentle handling and smooth transport are of prime importance.

   d. Telemetry of various vital functions, such as pulse and respiration, over relatively long distances can be of great assistance in the application of emergency care. In the future it may be possible in many areas to transmit an indication of patient's vital functions from the scene of a crash, and en route to the hospital, for display to specialists in the hospital. Well trained technicians will be able to perform more sophisticated treatment under a physician's remote control, and critically injured or ill persons will be properly transferred over great distances.

   e. Transport of the injured by a passerby who has little knowledge of emergency medical facility locations is a possibility.*

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*See Volume 12, Highway Design, Construction, and Maintenance for additional information on directional information to hospitals.

8. Admit injured to hospital.

   a. Delay in admission should be minimized so that definitive medical treatment can commence as soon as seriously injured person(s) reach the emergency department. To accomplish this goal the emergency department should have advance warning so that all necessary steps are taken to assemble pertinent personnel and any needed equipment. Advance notification is critical, particularly for smaller emergency departments, which are sometimes poorly equipped and not staffed on a 24-hour basis.

   b. There is a need to define more clearly the ambulance technicians' role in admission. They should provide information on the condition of the injured when found and emergency care given. In small emergency departments they should also be prepared to assist with movement of the injured from the ambulance to the receiving room if required. There may be a need for ambulance personnel to function as temporary emergency room aides.

   c. It is not uncommon for hospital emergency facilities to be inconveniently located, hard to find, and limited in ambulance handling space. Such aspects can become critical to providing prompt medical treatment to the injured. Each emergency department should be critically examined to insure that adequate location information and unloading space are provided for incoming ambulances.

   d. As the use of air ambulances expands, hospitals should develop standing plans for land transportation from the local airports or consider a helistop at the hospital proper.

   e. As part of the EMS system implementation, standardization of all emergency medical record forms and hospital emergency department admission procedures is needed.

C. During the transport process to and from the emergency scene, several types of skills and knowledge are required of both technician and driver. In the near future DOT will develop operational guidelines for ambulances that will describe the essential series of events in optimal time order that normally occur during response to a range of emergency situations from the time the request for service is received and the ambulance is dispatched to the time the requirement is satisfied and the vehicle is returned and ready for another mission.

1. A task analysis of ambulance operations will be conducted at typical locations nationwide, including public and private operations and operations in urban, suburban, and rural areas. Such factors as relationships of driver/technician with police, fire, injured person, relative of the injured, medical personnel, etc., will be identified. Emergency vehicle operating safety and maintenance will be fully treated.

2. The incorporation of vehicle operational guidelines in ambulance personnel training should have a positive effect on safer ambulance transport. Collection of ambulance collision data will allow evaluation of the effect of such training.

III. EMS SYSTEM COMPONENTS

An EMS system should be comprised of four principal components: communications, transportation (including personnel and equipment), law enforcement agencies, and emergency medical facilities.

A. Telecommunications.

1. In meeting emergency medical service needs, telecommunications are required to permit:
    a. Human health emergencies to be immediately reported to appropriate community agencies which manage and control health resources and services.

    b. Appropriate health resources to respond to such human emergencies at anytime and wherever they may occur.

    c. Recognition of the need for (and more immediate response to) health resources and services to life threatening emergencies within a time period which will insure the greatest saving of lives and limbs.

    d. Health agencies and professionals to marshal their individual and collective resources (staff, equipment, supplies) and coordinate their responses in the shortest effective time to meet any human need including catastrophic events.

e. Health agencies and physicians to provide guidance and direction to others on the scene of a human emergency pending arrival of trained health personnel.

f. The coordination of emergency health services with other emergency service systems within the community through Emergency Operation Centers or other means.

g. Special health resources (emergency departments, intensive care and coronary care units, burn and trauma facilities etc.) to be utilized to their most effective degree.

h. Transmittal of all appropriate vital human physiological information necessary during any emergency to the proper monitoring and decision making health professions and their centers.

i. Collecting, recording, and documenting information on human emergencies in order that emergency health care systems can review, revise and reorganize, as necessary to meet changing conditions and needs.

j. Safe transfer of acutely and chronically ill patients between health care facilities.

k. Optimum use of health resources in preventing or mitigating adverse medical effects of human emergencies.

2. An EMS system provides services affecting the sequence of events. The capability of the resources and the quality of their performance relate to the results, i. e., facilitate definitive medical care and faster patient recovery. Telecommunications in support of EMS appear to fall into the following categories:

a. Messages related to reducing response time, i. e., dispatching and controlling the movement of emergency vehicles (radio and/or wire).

b. Messages related directly to the patient and his care, i. e., medical telemetry and a "doctor's talk" channel (radio).

c. Extensions of both 1 and 2, above, from the emergency vehicle to the actual location of the patient, e. g., in an apartment, in a field, or a boat, etc. (radio).

d. Messages necessary for effective coordination and preparedness for reception of the patient, i. e., intra-hospital, hospital-to-hospital, and Resource Coordination Communications (RCC) center (wire/radio).

e. Paging systems to call individuals and mobilize medical personnel. While these are now mostly "beep" systems, two-way portable radio paging is the desired objective (radio).

f. Interface with police, fire, and other local Government agencies (radio and wire).

g. Disaster situations (radio and wire).

3. Not included in the above are the communications that would be used for entering the emergency response system. Undoubtedly the telephone will continue to be the primary means of "reporting" an emergency medical situation remote from the hospital. The national emphasis on implementation of the universal telephone emergency number, "911," provides the citizen an easily remembered emergency access number. A bi-product of the "911" system is expected to be a marked increase in coordination among agencies providing emergency services.

4. A multitude of technological advances has been made in the telecommunications area (as well as in other areas) and is pertinent to EMS. Heretofore, the relation of such advances to an entire EMS system has not always been considered. Among such technological advances are:

a. Citizen access to the response system through the universal emergency telephone number ("911"), and Resource Coordination Communication (RCC) Centers to manage the dispatch of ambulances, flow of medical information, and control of action taken.

b. Digital communication units and base terminals which have encouraged the standardization of brevity codes related to patient care, dispatch, and decision making.

c. Equipment development for "cellular modes" of communication in the 900 MHz area.

d. Telemetric monitoring of life signs of patients in medical emergencies for physicians and technicians in hospitals.

e. Specialized patient transportation units, such as mobile intensive care units.

f. Air ambulance operation using both rotary and fixed wing aircraft. Aircraft can be used for emergencies, routine transfer of patients between hospitals, transfer of patients to specialized treatment centers, or even for the transfer of vital organs and medications.

g. Minicomputers for operation in hospitals and communication centers to include management of resources, provide automatic dispatch and routing, and assist in decision making.

h. Television communications between the paramedic at the site and the hospital physician.

5. Provision is also made in some areas for coordinated communications support that is essentially areawide and provides a common dispatching point for public safety, highway maintenance, and forestry forces in addition to local governmental radio and TV services. With this communications base areawide dispatching of ambulances can be accomplished.*

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*One midwestern State is planning a consolidated State communications system that will provide direct access from communications (dispatching) centers to all radio-equipped public vehicles and governmental and public service facilities, including support to EMS functions. The initial objective is to develop and test procedures for utilizing normal, day-to-day, governmental communications to satisfy State and national emergency operational requirements as defined by the Federal Office of Civil Defense.

6. The design of the EMS communications support component should provide a continuous dispatching capability, flexibility of cross-network utilization, compatibility with radio, and perhaps transmission of vital human performance data - heart condition, etc. Wherever possible, direct-line telephone systems should connect fixed EMS facilities with provision for radio backup, if required by telephone failure. Communications design should emphasize the importance of using normal, day-to-day operating procedures as a prerequisite to emergency operations.

7. More specific criteria for the design of EMS communications will be available as a result of present and future Federally-supported studies and demonstration projects.

8. It is recommended that the planning for communications support of EMS systems consider emergency needs associated with natural disaster and national civil defense emergencies. The placement of communications centers in facilities that are protected in varying degrees from fallout and other nuclear attack effects should be considered. Guidance and assistance are provided by the State Office of Civil Defense to government at all levels in developing communications support capabilities that are applicable to large-scale emergency operations.

9. Communication and control are necessary elements in reducing the time interval between a request for emergency ambulance service and the arrival at the scene of an accident and/or delivery of a patient to definitive care. Two-way voice communication with the dispatching organization or between the ambulance and appropriate emergency organization is necessary for a vehicle to be "satisfactorily (or fully) equipped." Communications between the driver and technician, both visual and by voice, should be provided. A valuable expansion of this capability would be two-way communication with the hospital emergency department.

10. Control centers should be informed at all times regarding the location and availability of every ambulance and should control the movement of all vehicles. The control centers (Base Stations), wherever located, should

also have knowledge of emergency room status and acceptance capability. Wherever possible, selection of patient destination should be made on the basis of hospital capability and severity of trauma (guidelines and procedures should exist in writing). Records of incoming calls, time of dispatch and of return of each vehicle need to be maintained, along with times of arrival at the accident scene and the hospital.

B. Transportation and related equipment.

1. In an ever-increasing number, the operators of private ambulance services are finding the economics of business more restrictive and, as a result, many are leaving the profession and depriving many communities of ambulance transportation. Efforts have resulted in design criteria and specifications for various classes of ambulance vehicles, which should result in reasonably priced production models.* Research is now underway into the operation of helicopters for emergency medical transportation.**

2. There should be standardization of essential medical equipment carried by all ambulance vehicles. A vehicle to be considered satisfactorily equipped must have the equipment listed in the most recent equipment list recommended by the American College of Surgeons and, in addition, two-way communications. Consideration should be given to supplementing this list, based on local requirements. Unless a rescue vehicle accompanies an ambulance on every accident call, minimal rescue equipment such as a crow bar, bolt cutter, and miscellaneous small tools should also be carried.

   a. The current list of essential ambulance equipment issued by the American College of Surgeons appears as Exhibit IV. (See Chapter VIII for additional information.)

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*See Appendix F, The Economics of Ambulance Service.
See DOT Ambulance Design Criteria (ADC) National Academy of Engineering, National Academy of Science.
See GSA FSS KKK-1822 Emergency Care Vehicle-Ambulance.

**See Appendix G, The Use of Helicopters in EMS.

EXHIBIT IV

ESSENTIAL EQUIPMENT FOR AMBULANCES

1. PORTABLE SUCTION APPARATUS, with wide-bore tubing and rigid pharyngeal suction tip.
2. BAG-MASK VENTILATION UNIT, hand-operated, with adult-, child-, and infant-size masks. Clear masks are preferable. Valves must operate in cold weather, and unit must be capable of use with oxygen supply.
3. OROPHARYNGEAL AIRWAYS, adult, child, and infant sizes.
4. MOUTH-TO-MOUTH ARTIFICIAL VENTILATION AIRWAYS, for adults and children.
5. PORTABLE OXYGEN EQUIPMENT, with adequate tubing and semi-open, valveless, transparent masks in adult, child, and infant sizes.
6. MOUTH GAGS, either commercial or made of three tongue blades taped together and padded.
7. STERILE INTRAVENOUS AGENTS, preferably in plastic bags, with administration kits.
8. UNIVERSAL DRESSINGS, approximately 10 inches by 36 inches, compactly folded and packaged in convenient size.
9. STERILE GAUZE PADS, 4" x 4".
10. BANDAGES, Soft roller, self-adhering-type, 6" by 5 yards.
11. ALUMINUM FOIL, Roll, 18" x 25', sterilized and wrapped.
12. ADHESIVE TAPE, Two rolls, 3" wide.
13. BURN SHEETS, Two, sterile.
14. TRACTION SPLINT, Lower Extremity, hinged half-ring (ring 9" dia., overall length of splint 43"), with commercial limb-support slings, padded ankle hitch, and traction strap.

EXHIBIT IV (Cont'd)

15. PADDED BOARDS, Two or more, 4-1/2 feet long x 3 inches wide. PADDED BOARDS, Two or more, 3 feet long, of material comparable to 4-ply wood for coaptation splinting of leg or thigh.

16. PADDED WOODEN SPLINTS, Two or more, 15" x 3", for fractures of the forearm. (By local option, similar splints of cardboard, plastic, wire-ladder, or canvas slotted lace-on may be carried in place of the above 36" and 15" boards.)

17. INFLATED SPLINTS, uncomplicated, in addition to Item 16 above, or as substitute for the short boards.

18. BACK BOARDS, short and long, with accessories. (Adult and child)

19. TRIANGULAR BANDAGES.

20. SAFETY PINS, large size.

21. SHEARS, for bandages.

22. OBSTETRICAL KIT, sterile.

23. POISON KIT.

24. BLOOD PRESSURE MANOMETER, CUFF, and STETHOSCOPE.

This list was prepared by the Committee on Trauma of the American College of Surgeons and was printed in The American College of Surgeons Bulletin, (May 1970).

b. Exhibit V contains a list of access and extrication equipment that should be carried by an ambulance if a rescue vehicle does not accompany the ambulance on every accident call. The list of access and extrication equipment is as identified by the American College of Surgeons in their May 1970 Bulletin.

3. Provisions should be established for inspecting medical supplies and emergency medical equipment on a periodic basis and after each emergency use. Additional items, such as automatic chain saws, emergency off-the-vehicle lighting equipment, portable incubators, defibrillators, and stair chairs can be listed and justified separately on an ambulance project, or on a separate equipment project. In either case, Federal funding participation would be separate.

4. Vehicle Design.

   a. Federal Government-sponsored studies in design criteria and medical requirements have been completed. In the selection of a vehicle, project applicants are required to comply with the DOT/NHTSA Ambulance Design Criteria Manual* of February 1970 for their procurement.** Many variables have to be considered with direction toward procurement of the most economical vehicle to adequately fill the requirement. Consideration should be given to the benefits of vehicle standardization within adjoining areas and for systems delivering to common medical facilities.

   b. Any vehicle purchased in accordance with Federal Specification GSA-FSS KKK-A-1822, Emergency Care Vehicle - Ambulance,** and equipped in accordance with

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*"Ambulance Design Criteria" (ADC) is available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. Orders should cite the GPO Identification No. USGPO:-1970, 0-377-476, and include payment. Price: $0.60 per copy; 25% discount on quantities of 100 or over when mailed to the same address.

**Federal specifications prepared in accordance with the (ADC) by GSA will be used for procurements with 402 funds and are strongly recommended for general use. These specifications are available through the General Services Administration, Washington, D. C. 20406, for 40¢.

EXHIBIT V

ACCESS AND EXTRICATION EQUIPMENT FOR AMBULANCE USE

1. WRENCH (1), 12", with adjustable open end.
2. SCREW DRIVER (1), 12", with regular blade.
3. SCREW DRIVER (1), 12", Phillips type.
4. HACKSAW (1), with 12 wire (carbide) blades.
5. PLIERS (1), 10" vise-grip.
6. HAMMER (1), 5-point, with 15" handle.
7. FIRE AXE (1), with 24" handle.
8. WRECKING BAR (1), 24". (Bar and two preceding items can either be separate or combined as a forcible entry tool.)
9. CROWBAR (1), 15 inches, with pinch point.
10. BOLT CUTTER (1), with 1-1/4" jaw opening.
11. POWER JACK and SPREADER TOOL (1), Portable.
12. SHOVEL (1), 49 inches, with pointed blade.
13. DOUBLE-ACTION TIN-SNIP (1), minimum 8".
14. MANILA ROPES (2), each 50' long x 3/4" dia. A power winch is optional. A front-mounted winch with a minimum capacity of two tons is recommended, particularly in areas where it would not otherwise be readily available. In addition to rated cable, ambulance should carry a 15-foot rated chain with one grab hook and one running hook.

List as published in The American College of Surgeons Bulletin, (May 1970).

the Essential Equipment List of the American College of Surgeons, Committee on Trauma is eligible for federal funding under Section 402 of the Highway Safety Act of 1966.

5. Alternate Vehicles.

   a. Standard station wagons, modified hearses and carryalls are not adequate vehicles for emergency ambulance service, as they do not provide sufficient working space for proper en route emergency care and do not have adequate capacity or space for the necessary equipment. However, such vehicles used primarily as police patrol vehicles and not functioning routinely as ambulances may be considered for inclusion in Police Traffic Services 402 projects if they actually form a reserve emergency ambulance capacity (i. e., backup vehicles). While any ambulance-type vehicle with less than 54" headroom is considered suitable as an invalid transfer vehicle, it is not considered satisfactory for emergency medical care, nor eligible for Section 402 funding.

   b. Vehicles designed, equipped and manned for specialized medical use, such as mobile coronary case units, are not acceptable and fundable under this program.

6. Rescue Vehicles.

   a. Light rescue vehicles are eligible for EMS 402 participation provided they are routinely responsive to roadway-related emergencies. State plans should provide for the number of these vehicles necessary to supplement and augment emergency ambulance response capabilities within the State. Justification should indicate a highway-related extrication need with its associated equipment.

b. Crew-training requirements are the same as for emergency medical technician personnel. There is also a requirement for two-way radio communications. The use of this vehicle should not be for routine patient care, but rather for extrication support.

c. The following items of extrication and rescue-type equipment are eligible for funding support under Section 402:

1)	Apparatus, self-contained breathing, with one reserve tank	1
2)	Bar, wrecking, 48" long	1
3)	Crowbar, 66"	1
4)	Blankets	4
5)	Tool Box, for hand tools	1
6)	Extension Cord, 100' for floodlights 2 twist-lock connectors (10-gauge waterproof)	2
7)	Cutting Tools, for metal (chisels, saws, bolt cutters, etc., as needed, usually	1 ea.
8)	Reels, for extension cords	1
9)	Fire Extinguisher	1
10)	Gloves, protective, leather	1 pr.
11)	Hammer, sledge, 4-lb.	1
12)	Jack, 5-ton capacity (Porto-power set may be included)	1
13)	Generator, gasoline-powered, 1500W (Onan 105PC or equal)	1
14)	Lights, Flood, portable, AC 250W	2
15)	Rope, Manila, 1/2" dia., 50' length	2
16)	Sets of Handlights and Flares	1 ea.
17)	Resuscitator, inhalator, portable	1

d. As a matter of information, rescue vehicles have been of primary concern to the Civil Defense lifesaving effort under the Department of Defense. They are configured, equipped, and manned to aid in one major problem of recovery in national disaster, which is the release of survivors trapped in the wreckage of shelters, structures, and enclosures. In their recovery capability, they may also be involved in the effects of fallout, as well as the consequences of blast and fire near the points of detonation of nuclear weapons. These vehicles and their equipment are described in Federal Civil Defense Guide, Part E, Chapter 11, Appendix 4, Annex 1 of November 1967, under the title, "Civil Defense Rescue Trucks and Equipment."

e. Medium and heavy rescue vehicles and equipment are not eligible for Section 402 funding. The light rescue vehicle is being participated in because of the correlation between its extrication capability and the extrication/life-sustaining NHTSA Emergency Medical Services needs. Of major importance, however, is the potential that the light rescue vehicle and crew can be routinely and promptly available for highway accidents when needed to support an EMS capability.

f. It is preferred that properly equipped ambulances with trained personnel respond to highway accidents and provide transportation and care en route to the hospital emergency room.

g. An Extrication Course has been developed by DOT and is available to support training requirements in this vital area for both emergency medical technicians - ambulance and exclusively extrication personnel. Contact the nearest NHTSA regional office for information. (See Appendix N.)

C. Law Enforcement Agencies.

1. Law enforcement agencies should provide critical support in connection with all highway crashes. A police officer frequently arrives at the crash scene prior to the ambulance attendant and he is usually the last to leave. He is often called upon to give first aid and to assist with removal of the injured. He is responsible for crash debris clearance arrangements, restoring traffic flow, and conducting an investigation of the crash.*

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*See Volume 16, Debris Hazard Control and Cleanup.

2. Police reports of crash investigations should contribute to the basic data inputs for the evaluation of an EMS program. A written policy concerning the scope of the crash investigation function should be established by each law enforcement agency. In addition, these agencies should develop a checklist of tasks that a police officer should accomplish upon responding to a highway accident call.*,**,***

D. Emergency Medical Facilities.

1. Emergency medical facilities should be categorized according to capability. Guidelines for categorization of EMS facilities are provided in Exhibit VI.

2. Categorizing facilities could result in better use of manpower and facilities, more judicious choice of facilities, and direct delivery to the facility most appropriate to the need. This categorizing serves to define the scope of care which can be expected of a given facility, and unless time, distance, or the need for emergency resuscitation requires interim care, the injured should be delivered directly to the facility most suited to the situation. Class II facilities should be capable of treating the majority of serious cases and stabilizing critical cases that are beyong their capabilities where transfer to a Class I facility is necessary.

3. Any staffing reduction during parts of the 24-hour period may affect hospital classification category and should be considered. Periodic detailed surveys of such facilities should be conducted. In this way, potential needs can be anticipated and steps taken to satisfy such needs. Actions of this type frequently use appropriate checklists that are updated by comparison with other EMS systems and make full use of professional recommendations.

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*See Volume 15, Police Traffic Services.

**See Volume 18, Accident Investigation and Reporting.

***A training course for traffic law enforcement officers titled "Crash Injury Management" has been developed by DOT and is available. Contact the nearest NHTSA regional office for information. (See Appendix N.)

EXHIBIT VI

GUIDELINES FOR CATEGORIZATION OF EMERGENCY MEDICAL FACILITIES

1. Class I Facility (Major Emergency Department)

Facilities - Fully equipped to render complex and comprehensive emergency care on the premises, as well as any required definitive care up to and involving rehabilitation. Diagnostic facilities constantly available for even the most specialized procedure. Blood bank available. Ready accessibility to special purpose operating rooms.

Staffing - Twenty-four-hour staffing by highly competent medical and hospital support personnel. Ready accessibility to all types of specialists on a 24-hour basis.

Scope of Care - Routinely capable of performing the most advanced surgical and medical procedures including cardiac surgery, the treatment of severe head, neck, and chest injuries, as well as major plastic surgical procedures.

2. Class II Facility (Limited Emergency Department)

Facilities - Equipped to deal with most life-threatening emergencies but not with highly specialized resuscitative and surgical procedures. Diagnostic facilities (laboratory and X-ray) and blood bank constantly available.

Staffing - Twenty-four-hour staffing by component personnel on premises or on call but lacking in some specialist services and medical support personnel.

Scope of Care - Equipped to deal with routine medical and surgical procedures but lacking in ability to accomplish some highly specialized diagnostic, medical and surgical procedures. Total needs for stabilization or care of the critically sick or injured may exceed the capabilities of the facilities and personnel.

3. Class III Facility (Provisional Emergency Unit)

Facilities - Emergency units in small or specialty hospitals, clinics, industrial plants, or public buildings with limited or modest first aid equipment. Diagnostic capability and supporting equipment may not be available.

Staffing - Limited to either full or part-time professional nursing coverage and only part-time physician coverage.

Scope of Care - Limited to treatment of minor conditions and emergency resuscitation. Capable of controlling external blood loss, maintaining airways, performing external cardiopulmonary resuscitation and similar procedures.

IV. POSTADMISSION

Although the highway EMS system terminates with hospital emergency department admission and the documentation of EMS system response, the medical facility treatment and the final results to the injured are essential to the proper assessment of prehospital EMS system performance. A record should be completed on each emergency patient from the time of his injury until hospital discharge or completion of autopsy. These records, which individually must be treated as confidential, can provide much of the data for system evaluation and subsequent upgrading.

V. STATE EMS PROGRAM ELEMENTS

It is recognized that the State will tailor its program and conduct its EMS program activities in accordance with State needs and practices. From a management viewpoint, it is convenient to consider a State program as being comprised of several major program elements. These elements partially overlap information presented in prior paragraphs, but are described here in terms of a State action plan for EMS.

A. Program Administration.

Program administration is primarily concerned with assuring that the program is established and operated in accordance with national and State standards and requirements. Effective administration requires:

1. Identification of participating agencies.

   Agencies which have EMS involvement and whose participation is necessary for proper program operation must be identified.

2. Coordination and liaison.

   Well-defined channels of administrative communication should be established for coordination and liaison of EMS program activities with other State agencies and groups.

3. Public relations and public information.

   The generation of public interest and the dissemination of information to the public is an important responsibility of the program administration element of the EMS program. It should be noted that Standard 11 suggests that the general public be encouraged to take first aid courses.

4. Guidance procedures.

   Guidance should be provided to local agencies and others who have EMS system responsibilities. However, some States may wish to establish as a specific program function the preparation of guidance procedures. This volume can serve as one basis for such guidance.

B. Licensing, certification, and inspection.

Licensing, certification and inspection are the principal means by which State requirements and those specified by Program Standard 11 can be enforced and incorporated into the EMS system. There are many ways in which regulation and enforcement can be accomplished by the State. Some States may decide to specify and enforce Statewide uniform standards and requirements. Others may decide to delegate most of the responsibility to local governments.

2. To meet the requirements developed, the following specific systems might be implemented:

   a. A system of issuing permits to establish and operate an ambulance or rescue vehicle service.

   b. A system of certifying ambulance and rescue vehicle personnel, including dispatchers, drivers, and attendants. (For administrative efficiency, the fulfillment of ambulance driver license requirements might be indicated on the appropriate motor vehicle operator's permit.)*

   c. A system of certifying emergency ambulance and rescue vehicles.

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*See Volume 5, Driver Licensing.

3. Through these systems, requirements specified by State and local governments can be implemented. The system of requiring permits for ambulance service operators can be used to regulate the establishment of new services (for example, proof of public necessity might be required), and the operations of existing services (for example, restrictions as to certain geographic areas). The system of certifying ambulance personnel can be used to specify qualifications. Minimum requirements might be established as to character, age, physical capability, knowledge of area (including locations of hospitals, road networks and traffic patterns, barriers to movement, etc.), training in emergency medical care, and proven ability to operate emergency vehicles in a safe manner.* The system of certifying ambulance vehicles can be used to specify the type of vehicle and equipment to be carried.

4. The mechanism by which requirements are established may include statutes, ordinances, contracts or franchises, codes, etc. Several appendices illustrate mechanisms that can be employed and provide an indication of requirements that might be specified.

   a. Appendix I is the model ordinance or statute developed by the American College of Surgeons, the American Association for the Surgery of Trauma, and the National Safety Council.

   b. Appendix L is a sample State Act to regulate ambulance services.

   c. Appendix M is a sample contractual agreement for ambulance services provided by a private operator.

5. Effective regulation requires some means of enforcement. This might include periodic inspection of facilities, vehicles and associated equipment, and the testing of personnel. Assessment of EMS system performance through reporting of certain EMS response data is another indicator.

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*See Appendix K, Sample Invitation for Applicants for the Position of Emergency Medical Technician.

C. Training for personnel administering emergency care.

1. Quality ambulance services exist in only a few localities. Some of the reasons for this deficiency are:

    a. Lack of local leadership and involvement.

    b. Minimum consideration given to wages.

    c. Little recognition of the ambulance profession as a career.

    d. Instability of career pattern.

    e. Inadequate recruitment procedures and training.

2. To aid in the elimination of these deficiencies and areas of neglect, the ambulance attendant should be fully established in an emergency care career pattern which provides attractive compensation, prestige, and recognition deserving of his services as a member of the emergency care team. If the needs for ambulance service in a locality are such that an ambulance attendant is not fully occupied, one alternative is that he be an employee of a hospital where he might serve as an assistant in the emergency department, intensive care unit, operating room, or other areas where injured or acutely ill patients are treated.

3. Ambulance personnel, rescue squad workers, policemen, firemen, participating physicians, and other employees or volunteer members of public and private organizations having a responsibility for the provision of emergency medical care should be trained in and held accountable for proper performance of their duties.

4. Ambulance personnel are responsible for all lay emergency care from the time they first see the injured or ill through transportation and delivery to the care of a physician. Therefore, they should be able not only to appraise the extent of first aid rendered by others but also to carry out whatever additional measures are necessary to minimize morbidity and mortality. They should be instructed in:

a. Safe operation of emergency vehicles.

b. Communication between the scene of the emergency, traffic authorities, dispatchers, and emergency departments.

c. Rendering of necessary additional care en route.

d. Preparation of records and reports for transmission to medical and other authorities.

5. Although the emphasis on certain EMS subjects will vary depending upon the nature of the personnel providing the care, all personnel, whether responsibility is transferred to the ambulance attendant or to other persons, should be trained so that maximum care can be assured.

6. Recognizing the importance of training, DOT, in cooperation with other agencies and groups, has developed a total training package to provide the skills and knowledge required by ambulance technicians/drivers at the entry level of performance.* In the future, a training package for the intermediate and advanced skill levels, including ambulance operating practices, is planned.**

D. Training for communications dispatchers.

The States should consider a training program for communications dispatchers. Two exhibits are included as general guidelines to illustrate the broad training required of a dispatcher in a relatively large and complex central communications facility. These outlines can be modified as appropriate for smaller facilities and those limited solely to the ambulance dispatching function. Emergency care training and hospital emergency department indoctrination for ambulance dispatchers should be considered since it will allow better understanding of the problems of the vehicle crew and better dispatching decisions. It will also develop competence in the medical vernacular associated with accidental injury and trauma for more effective functioning.*

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*Information on these DOT training packages is available through your nearest NHTSA regional office. (See Appendix N.)

**Appendix H, Outline of Material for Ambulance Personnel Training, contains the subject material from which these training packages were developed.

1. Job description for communications dispatcher.

   A job description for dispatcher personnel at the central communications facility in a large county is shown in Exhibit VII.

2. A new employee is processed through both an in-class and on-the-job training and testing program as outlined in Exhibit VIII.

E. EMS survey, plan development, and evaluation.

A comprehensive EMS plan should provide for the assessment of EMS system capability and performance and the establishment of action programs to remedy identified deficiencies.

1. The plan should be revised periodically to reflect increased knowledge of State EMS operations, the establishment of more definitive EMS standards or criteria, and actual program accomplishments.

2. The guidelines provided in this paragraph were developed under NHTSA contract** and provide a logical stepwise approach to assist States in developing this aspect of their program.

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*Contact your nearest NHTSA regional office for information on the DOT Dispatchers Course. (See Appendix N.)

**The guidance document, Emergency Medical Services Survey and Plan Development, prepared under this contract, provides detailed procedures for survey of local EMS systems and for establishing an EMS data system. This document is available for $3.00 from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22151. Requests should cite document No. PB 178232, Vol. 2 (Contract FH-11-6554).

EXHIBIT VII

JOB DESCRIPTION FOR COMMUNICATIONS DISPATCHER

Definition

Under supervision, to dispatch emergency police, fire, and other public safety equipment in a coordinated manner; to operate various communications equipment; and to do related work as required.

Typical Tasks

Receives and transmits emergency radio calls for fire and law enforcement personnel; receives reports on fires, plane crashes, and requests for resuscitators; dispatches fire equipment and ambulances; receives complaints and dispatches law enforcement personnel; coordinates search and rescue operations between various agencies in plane crashes and other major emergencies; transmits information by telephone or radio; types and files cards recording persons or equipment wanted; reports the need for repairs on radio equipment; calls by telephone off-duty personnel needed for emergency service; maintains complete radio logs on all messages received and transmitted; compiles and types detailed reports on activities during the shift worked; keeps familiar with major roads, streets, industrial plants, and buildings; operates key point attack warning equipment; operates a lease line teletype and a TWX; performs miscellaneous clerical work.

Employment Standards

Completion of the 12th grade and one year of experience as a dispatcher, or three years of general business experience.

Possession of a valid third class Radio Telephone Operator's License, or higher, issued by the Federal Communications Commission; must be obtained prior to permanent appointment.

Aptitude for learning the operation of two-way radio and telephone communications equipment; ability to learn and retain location of roads, streets, major industrial plants, and public buildings in the county; aptitude for learning the rules and regulations of the department; ability to understand and carry out all directions; good voice and excellent hearing; willingness to work on Saturdays, Sundays, holidays, and at odd and unusual hours.

EXHIBIT VIII

SAMPLE PROGRAM FOR PROCESSING AND TRAINING NEW DISPATCHER PERSONNEL

Date Assigned ________________ Date Completed ________________

NAME ____

I ADMINISTRATION
- (a) Processing
- (b) Appointment for physical examination

II DISPATCHING DIVISION
- (a) Issue key, earphone, and message box
- (b) Apply for ID card
- (c) Assign DSN (Dispatcher Serial Number), notify Administration and Technical Divisions of assignment

III ORIENTATION
- (a) Read general orders
- (b) Read introduction to procedure manual
- (c) Review station "sign in" log
- (d) Review system chart
- (e) Tour communications center

IV READ AND STUDY
- (a) Procedure manual

V MEMORIZE
- (a) Department key numbers
- (b) Codes
- (c) System chart
- (d) Police chiefs
- (e) Fire chiefs
- (f) Other key department heads

EXHIBIT VIII
(Continued)

VI FIELD TRIPS (When possible to schedule)
- (a) Sheriff's Department
- (b) Central fire district
- (c) Public works
- (d) Field orientation with director
- (e) Hospital emergency department

VII DISPATCHING TRAINING (Preliminary)
- (a) Monitor frequencies
- (b) Practice logging
- (c) Monitor telephones

VIII TESTS (Prior to assignment)
- (a) Department key numbers
- (b) Codes
- (c) System chart

IX RESPONSIBILITY ASSIGNMENTS*
- (a) Local government console
- (b) Police consoles
- (c) Fire console
- (d) Ambulance consoles

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*At this point in the training program a new employee is assigned to an experienced dispatcher for "on-the-job" training and experience.

a. Areas of concern are the organizational and planning procedures required at the State level, the steps required to implement a State program, actions required at the local level to facilitate program implementation, and data needs for EMS evaluation and determination of program priorities.

b. The guidance does not specify rigid procedures to be followed in all States. Sufficient flexibility is provided to allow for variations in State and local characteristics while retaining comparability in data collection and general evaluative techniques.

c. Development and implementation of a program, therefore, involves organization at the State level, between State and local levels, and at the local level analysis and planning based on adequate information, active participation by government and nongovernment organizations, and periodic evaluation of progress.

d. To meet requirements posed by the Standard a State program should incorporate:

   1) Leadership and careful planning at the State level.

   2) Interest and active participation at the local level.

   3) Data collection sufficient to permit assessment of EMS performance and evaluation of the impact of specific program policies on achievement of program objectives.

e. Procedures suggested in this guidance are grouped into eight steps:

   1) Step 1: Establish State-level organization.

   2) Step 2: Evaluate legislative and administrative provisions relative to Federal Standards.

   3) Step 3: Survey local EMS systems.

   4) Step 4: Prepare comprehensive EMS plan.

5) Step 5: Establish EMS data system.

6) Step 6: Identify deficiencies in local EMS systems.

7) Step 7: Determine priorities and provide funding for support of local activities to upgrade EMS.

8) Step 8: Establish procedures for periodic evaluation of EMS program.

3. The steps suggested for implementing a State EMS program, as outlined in paragraph (2) above, are listed roughly in sequence. However, they are not mutually exclusive and, depending on progress made in individual States, concurrent activities may be undertaken. The rate of progress can be expected to vary from State to State, depending on activities already underway in the EMS area (particularly at the local level), interest or organizations concerned with EMS, and other factors. These steps are:

a. Step 1: Establish State-level organization.

1) In the implementation of the provisions of the Highway Safety Act of 1966, a Governor's Representative/program manager for highway safety has been appointed in each State, and organizational arrangements to prepare a comprehensive highway safety program plan should have been made. However, the organization and planning to date have in most States been directed at the overall problem of highway safety, not specifically at emergency medical services. Because of the size and complexity of the EMS program, it may be desirable for the Governor's Representative/program manager, in conjunction with the appropriate State agencies, to designate a qualified person to be responsible for the development, operation, and maintenance of this program.

2)* Experience in other complex programs indicates that acceptance and implementation are facilitated if both policy advisory and technical committees are formed early in the planning process. If possible, membership of both committees should be drawn from government and private groups closely identified with the committees' functions. The advantages of such committees are that they:

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*See Appendix Q. Model Document for Establishment of EMS Committees.

a) Provide a broad basis for responsibility and policy designs.

b) Involve government and nongovernment leadership in planning and implementation problems and decisions.

c) Serve as an educational channel to local officials and citizens, thereby increasing understanding and acceptance of the EMS program.

d) Provide a method of cooperation between government and nongovernment organizations concerned with highway safety and citizen leadership.

3)* The chairman of the State EMS policy advisory committee should be the director of the Department of Health, and its membership should be drawn from such State departments as the Highway Patrol or State Police and Department of Motor Vehicles and from the leadership of such organizations as the State medical, hospital, first aid, and ambulance associations, the Red Cross, and other interested groups. The functions of the policy advisory committee are to assist the State Government in making the policy decisions necessary for a realistic EMS program and to serve as an educational channel to local government and other groups interested in EMS problems.

4)* The technical committee is responsible for analyzing information on EMS operations, contacting local government and nongovernment groups to obtain additional information and to encourage participation in the EMS program, and assisting the policy advisory committee in developing a comprehensive EMS program and in evaluating effectiveness of program activities. The technical committee should be supported by a permanent staff with competence in communications, ambulance operations, hospital administration, emergency medical treatment, and data handling. Depending on the magnitude and complexity of the EMS program, this staff group may have full- or part-time EMS program responsibility.

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*See Appendix Q. Model Document for Establishment of EMS Committees.

b. Step 2: Evaluate legislative and administrative provisions relative to the Standard.

1) One of the first tasks of the EMS committees is to assess existing requirements in the areas specified in the Standard as reflected in State rulings. This involves the following work:

a) For each of the minimum program requirements listed in the Standard, review relevant State legislation, judicial decisions, or administrative rulings, if any.

b) Tabulate these requirements, indicating responsible State agencies.

c) Evaluate consistency of varying requirements and degree of coordination among responsible agencies.

d) Identify requirements specified in the Standard for which no activities have been initiated at the State level.

e) Describe all pending legislation relating to EMS, whether likely of enactment or not, with an assessment of such probability for each item.

2) It is not the purpose of this task to provide a basis for drafting legislation or recommendations for administrative requirements. It will, however, indicate areas where no action has been taken at the State level and which must therefore receive attention, and for those areas where some action has been taken, it will describe specifics.

c. Step 3: Survey local EMS systems.

1) The purposes of this step are to:

   a) Inform local officials regarding the highway safety program and its EMS aspects.

   b) Develop information on characteristics and operations of local EMS systems.

   c) Generate local interest in EMS evaluation and improvement.

   d) Provide a basis for delineating EMS areas or reporting jurisdictions.

2) The extent of the survey effort required in a State will depend on the amount of information already available. Special studies of EMS or of major system elements such as ambulance services or emergency medical facilities have been conducted in some States. In others, information may be available from State agencies or private organizations on local EMS operations or on local organizations concerned with EMS. Before plans are made to survey communities within a State, therefore, it is very important that these sources of information be thoroughly explored.

3) Special attention should be paid to reporting procedures and data availability since program evaluation, in the long run, will require adequate data collected on a uniform basis. Exhibit IX, following this page, lists the type of information that would be useful in assessing data availability and indicates potential sources. In making this assessment and before contacting local organizations or individuals, the EMS technical committee should have formulated a data framework suitable to its purposes. Therefore, a thorough review of the data system suggested in this volume is necessary at this point. (The system and its application are described in Steps 5 and 6 of this paragraph.)

EXHIBIT IX

TYPES AND SOURCES OF DATA ON EMS SYSTEMS

Type of Data	Source
Law Enforcement	
1. Reporting requirements for State and local police, data collected, and analyses made at the State level	Public Safety Department (or Highway Patrol or State Police
2. Sources of data on law enforcement activities	
3. Activities of law enforcement personnel at the scenes of crashes not currently included in standard reports	
Communications	
1. Communications networks contributing to EMS operations	Public Safety Department, Advisory Committee on Communications
2. Present reporting requirements	
3. Sources of data on communications traffic (e.g., communications centers, law enforcement agencies)	

EXHIBIT IX
(Continued)

Type of Data	Source
Ambulance Services (or Comparable Organizations)	
1. Variations in the characteristics of emergency transportation services in urban, suburban, rural, and remote areas	Public Safety Department Public Health Department Medical association Hospital association Associations representing ambulance services Hospital planning association First aid associations Accident prevention or injury study agencies
2. Present reporting requirements	
3. Sources of data on ambulance operations (e.g., ambulance companies, communications centers, law enforcement agencies, private organizations)	
Emergency Medical Facilities	
1. Variations in the characteristics of emergency medical facilities in urban, suburban, rural, and remote areas	Public Health Department Medical association Hospital association
2. Present reporting requirements	
3. Sources of data on EMS operations	

4) In States where EMS has been the subject of detailed study, the survey of local systems can be limited to the generation of interest in EMS evaluation and the development of a data system and to discusssion of suitable boundaries for local EMS areas or reporting jurisdictions. In most States, however, a more extensive effort will be required. This will involve contact not only with local leadership, but also with representatives of law enforcement agencies, ambulance services, communications centers, and emergency medical facilities.

5) In practice, it is not necessary to conduct a survey of this depth in every community in a State. It is necessary, however, to identify leadership groups in each community to generate interest in EMS problems and encourage local participation in program activities, particularly in the establishment of a comprehensive data system. It is suggested, therefore, that the survey be conducted in two phases:

   a) Detailed survey of a sample of communities selected to reflect variations in urbanization, EMS characteristics, political organization, and other relevant factors.

   b) Limited survey of remaining communities to identify and establish contact with local leaders or leadership groups and to define EMS organization and service areas in a preliminary way.

6) The purpose of a limited survey is to assure that a basis for active local participation is established. This is necessary prior to initiation of Step 5 and subsequent steps in the EMS program. Field studies conducted prior to preparation of this volume indicate a wide variation among political jurisdictions with regard to the interests and affiliation of individuals willing to assume leadership roles in the EMS field. In some areas, for example, an EMS committee with broad community representation may already be active. In one study area, significant assistance was received from the director of the local communications center. In another area, the police chief was

the driving force. Specific guidance regarding local leadership, therefore, cannot be given. The survey effort must be flexible enough to examine alternatives and select those individuals or groups most likely to provide effective leadership. Members of the State-level policy advisory committee should be of considerable help in arranging preliminary contacts in local areas.

d. Step 4: Prepare a comprehensive EMS plan.

Step 4 consists of assessing and organizing the information gathered in Step 3, preparing a comprehensive EMS plan, and preparing a summary report to NHTSA. The objectives of the plan should reflect the overall objectives of the State EMS program.

1) The outline in Appendix O should be used in preparing the comprehensive plan. It provides a framework for describing current conditions and major problem areas in the State and for detailing proposed EMS program activities toward standard implementation.

2) The comprehensive EMS plan provides the basis for preparing the subelement plan and a summary report. This report should indicate major problem areas, proposed legislative or administrative actions relative to these problem areas, and special studies required to provide sufficient background data for legislative decisions. The report should also outline proposed organizational arrangements, scheduling, data use, and anticipated costs for the establishment of an EMS data system in Step 5 and for subsequent steps.

e. Step 5: Establish EMS data system.

1) The survey of local EMS systems (Step 3) and the subsequent analysis (Step 4) will permit identification of major problem areas and of geographic locations of concern. Such identification is based largely on informed judgment and, in any event, reflects only partial coverage of the State or of EMS system elements (unless a detailed study has been made for the State).

2) In most States statistical data on the operation and capabilities of emergency services are limited or nonexistent. Routine reporting on accidents is undertaken only by State and local police, who are concerned primarily with causes rather than with consequences. Information on injuries is limited and is not classified in a form suitable for assessing EMS requirements. Typically, no reporting is done by ambulance company or emergency room personnel. It is not possible, using currently available data, to document specific inadequacies in EMS system operations or to determine program priorities other than in a general way. Step 5 involves the development and implementation of a data system designed to provide, on a routine reporting basis, the data required to document system operations, identify problem areas, and measure the impact of system modifications.

3) Characteristics of a data system.

The critical components of an EMS system are:

a) A reporting source.

b) Emergency department facilities.

c) Law enforcement agencies.

d) Ambulance service.

e) Communications.

4) Deficiencies could occur at any one or several points in this system; for example, in some areas a major problem may be inordinate time between occurrence and discovery of crashes. In other areas facilities for accident reporting may be limited, communications may be inadequate, ambulance personnel may not be sufficiently trained in first aid techniques, or emergency room capability may not be adequate to handle certain types of emergencies.

5) To be effective, therefore, a data system should have the capability to measure performance of each

component as a basis for identifying such problem areas. Two types of data are required for a comprehensive system: inventory data (describing the characteristics of the local system) and response data (describing the performance of the system).*

a) Inventory data.

The purpose of collecting data of this type is to provide a description of what can be termed EMS assets. These include the communications network (central facilities, provisions for summoning and dispatching aid, capability for two-way communication, etc.), ambulance services (equipment, first aid supplies, personnel by level of training), emergency medical facilities (equipment, staffing) and emergency care training resources. Data of this type would be collected once, with provision for updating to reflect changes.

b) Response data.

The purpose of collecting response data is to provide a basis for assessing system performance. For all injury crashes, data are required on the various critical times from occurrence of crash to receipt of definitive treatment, on injury characteristics, and on first aid rendered at the scene or en route to hospital. Reports are required from police, ambulance attendants, emergency room personnel, and from the communications center if there is one in the area. These data should be routinely collected to provide a statistical data base for continuing evaluation of system performance. Their provision should not, however, in any way be organized so as to interfere with immediate and optimum EMS.

6) Test studies in various parts of the country prior to preparation of this volume indicated that a significant

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*Detailed descriptions, including data collection formats, are provided in the guidance document, Emergency Medical Services Survey and Plan Development (see footnote on p. xx).

proportion of the injuries sustained in highway crashes are minor. A two-level system for data processing, providing for limited analysis of minor injuries and more detailed analysis of moderate and severe injuries, may be possible after experience has been gained with the data system as currently defined.

7) The importance of local interest and active participation in data reporting was referred to above. It is emphasized again here because it is vital to the success of a data system that relies on reporting by a variety of organizations. Step 3 activities should provide points of contact in each community to be used as nuclei for generating local interest. But a more formal arrangement would be desirable so that the effort required to initiate the data system can be properly coordinated and continuity can be maintained.

8) A completely formalized arrangement cannot be applied to all States equally, because of variations in local government organization and State-local relationships. One State, for example, has enacted legislation requiring each county to establish an emergency medical committee to plan and evaluate emergency care in the county. Responsibility for the data system would be an appropriate function for such a committee. Another State is planning to locate an employee of the State health department in urban counties to assume responsibility for EMS planning or evaluation. Experience with other complex programs suggests that an organization arrangement, including a broadly representative committee with specific program responsibilities and a permanent full-time staff, offers a reasonable guarantee of success.

9) The first activity in Step 5 is to delineate EMS reporting areas on the basis of information collected in Step 3. This activity should be undertaken concurrently with Step 4 activities so that data collection procedures can be initiated as soon as possible. In many States the county is an appropriate area within which to evaluate EMS, particularly since the county hospital is frequently the major source of emergency

treatment and since counties often have regulations covering emergency services. In rural areas, it may be more suitable to conduct planning on a multicounty basis. In areas where counties are not strong units of government, separate treatment of incorporated and unincorporated areas may be warranted. In general, initial area designations should reflect hospital and ambulance service areas, subject to the political constraints referred to above.

10) Procedures for coding and processing data received from the various reporting entities are included in the guidance document. Several organizational alternatives are available to accomplish this function, ranging from complete responsibility at the local level to complete responsibility at the State level.

11) Analysis of data processing requirements for the inventory data system suggests that most of this effort should be done at the State level. The primary functions to be performed at the local level include collection of data, reviewing data forms for completeness, and following up with participating organizations when required.

12) Past studies of data systems requiring continuous reporting such as the response data system suggest that, as a minimum preliminary screening and matching and coding of report forms should be done at the local level. This simplifies followup procedures that may be required to fill data gaps or obtain missing report forms. After coding has been completed, data processing could be done on local equipment, either community-operated or operated by a commercial service center, or forms could be sent to the State level for processing.

f. Step 6: Identify deficiencies in local EMS systems.

1) The data system described in Step 5 permits two levels of deficiency analysis to be undertaken. Inventory data can be used to assess the extent to which communities are meeting the first six requirements of the Standard and any State requirements that have been introduced.

Since response data constitute the major input to program evaluation, these data provide the basis for more precise identification of deficiencies and for specification of more detailed requirements that can be done with inventory data alone.

2) Analysis of inventory data provides documentation on training levels of emergency personnel, characteristics of transportation and communications equipment, and arrangements for coordination of emergency system elements. This will permit further revision of the comprehensive State plan as modified in Step 4. However, the information is primarily descriptive and does not provide an objective basis for assessing adequacy of such EMS requirements as exist at State and local levels.

3) Response data fill this gap but require continuing analysis for periods of time that vary widely according to frequency of highway crashes and level of analytical detail required. Three types of data essential to an evaluation of EMS systems are required:

   a) Type and severity of injuries.

      These data are essential to determining time of response and skill level requirements.

   b) Emergency care actions taken.

      These data are the basis for judgments regarding adequacy of training of emergency personnel and of others assisting at the scenes of crashes.

   c) Time sequence.

      These data reveal problems in system response to highway crashes.

4) The guidance document provides a list of report formats which could aid in system assessment and the potential use of each.

5) Response data can serve a variety of other local purposes. For example, information on crash locations relative to ambulance and hospital locations can be used to develop an optimal ambulance location plan. Detailed analysis of time-sequence data can be used to identify specific geographic problem areas and to provide the basis for cost-effectiveness analysis of remedies. Analysis of injury characteristics can be of value in evaluating emergency room staffing patterns.

g. Step 7: Determine priorities and provide funding for support of local activities to upgrade EMS.

1) After deficiencies in local EMS systems have been identified, the preliminary comprehensive EMS State plan should be revised to include specific program actions, indicating priorities to be applied to each. In practice, both local and State committees will be assessing needs and developing specific program suggestions. Both groups will be faced with priority problems. The local committee must assess alternative approaches within the EMS area; the State committee must assign priorities among areas.

2) The difficulty is that there are often several alternative solutions to a given problem. It is not appropriate to specify an approach to the assignment of priorities that must be followed by all States. It is suggested, however, that each local committee be urged to accept responsibility for assessing local needs and recommending alternative programs based on guidelines provided by the State. Each recommendation should be documented, to the extent possible, in terms of estimated cost and potential impact on volume of fatalities and severe injuries. State allocations could be based on a comparative evaluation of these programs in approximate cost-effectiveness terms and on an assessment of the distribution of funds (on a per capita or per vehicle mile basis) that would result.

3) The preliminary State plan developed in Step 4 should be revised to reflect these program decisions and should be resubmitted to NHTSA. At this time,

specific requests for Federal funds can also be made in accordance with procedures specified by NHTSA.

h. Step 8: Establish procedures for periodic evaluation of EMS program and refinement of State plan.

   1) Periodic evaluation of progress is an essential element of an EMS program, to compare actual accomplishment with goals established in the State plan and to permit continuing assessment (and modification, if indicated) of data system inputs.

   2) Several types of reports should be prepared on a periodic basis:

      a) Inventory characteristics, by community.

         These data can be used to compare progress made in achieving existing standards or standards that will be developed at Federal, State and local levels.

      b) System reponse.

         If problems have been identified in response times, in first aid provisions, or in other aspects of system performance, summaries of these elements (prepared on at least an annual basis) will indicate improvements resulting from program activities. This provides a basis for assessing the effectiveness of program activities.

      c) Deficiency analysis.

         This is essentially an output from reports described in this chapter. It is a listing of deficiencies, by area, that still require program action and should be used as a guide for reevaluating and redirecting program activities as necessary.

VI. PERSONNEL TRAINING

A. General.

1. The "Basic Training Program for Emergency Medical Technicians-Ambulance," prepared in compliance with the

recommendations of the National Academy of Sciences, is the recommended course of instruction for ambulance drivers/technicians. The course was designed to provide approximately eighty-one hours of formal instruction and describes the minimum level of performance and competence required of trained ambulance personnel. Because of the existence of an adequate and recommended training course, Federal 402 funds will not be used for designing or developing new basic training courses.

2. Personnel who have received prior training in American Red Cross Standard and Advanced First-Aid Courses may be credited for equivalency training toward the eighty-one hours, if they possess a valid certificate from a Red Cross or State EMS instructor. In addition, under proper guidance, individuals may receive on-the-job training as part of the eighty-one hours instruction, if the State program so authorizes. For a course to be considered equivalent to the DOT 81 hour course it must be equal in course content and time allocated to instruction. (See Appendix B.)

3. Appendix H contains an Outline of Material for Ambulance Personnel Training.

4. The "Basic Training Program for Emergency Medical Technician-Ambulance" is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Three volumes can be obtained from that address at the prices shown.*

   a. CONCEPTS AND RECOMMENDATIONS, GPO #USGPO:-1970 TD-2:208:EM 3, $0.35 per copy.

   b. COURSE GUIDE AND COURSE COORDINATOR ORIENTATION PROGRAM, GPO #USGPO:1970, TD-2:208:EM 3/2, $0.30 per copy.

   c. INSTRUCTORS LESSON PLANS, GPO #USGPO: 1970, TD-2:208:EM 3/3, $2.50 per copy.

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*All GPO items carry a 25% discount on quantities of 100 or over of each item when mailed to the same address.

B. Suggested Method for Establishing Emergency Medical Technician Training Centers.

1. To better enable emergency medical care personnel to carry out their responsibilities as recommended by the Committee on Emergency Medical Services, the National Academy of Sciences, in their publication, "Training of Ambulance Personnel and Others Responsible for Emergency Care of the Sick and Injured at the Scene and During Transport," states: ". . . Employees or volunteer members of public and private organizations, having a responsibility for the delivery of health services, must be trained in, and be held accountable for, administration of specialized emergency care and delivery of the victims of injury or acute illness to a medical facility. This category of lay persons includes ambulance personnel, rescue squad workers, policemen, firemen, lifeguards, workers in first aid or health facilities of public buildings and industrial plants, attendants at sports events, civil defense workers, paramedical personnel, and employees of public or private health service agencies. Specialized training, retraining, and accreditation of such persons necessitates development of training courses, manuals, and training aids adequate to provide instruction in all emergency care short of that rendered by physicians or by paramedical personnel under their direct supervision."

2. The Department of Transportation has complied with the above recommendation by contracting to have a series of training courses developed, the first of this series being the "Basic Training Program for Emergency Medical Technicians-Ambulance."

3. The course consists of 25 lessons involving approximately 71 hours of classroom instruction and demonstrations. A minimum of an additional 10 hours of in-hospital emergency room training is highly recommended.

4. The course is designed to be offered two hours a night, once or twice a week, rather than on a continual eight-hours-a-day basis. This training procedure was selected because it is advisable for the trainee to practice and develop proficiency in each of the critical skills of emergency medical care before advancing to the next lession. Riding as a third person

with an active and experienced crew during the training period should be considered an essential part of the training experience along with the in-hospital emergency room training.

5. With training offered on an evening basis, it is desirable to have the training institution within a reasonable distance of the emergency medical care personnel. Consequently, the local community hospital is a logical site. With the results of a rather simple survey, hospitals can be selected that are central to an appropriate number of ambulance services in a given geographic location. The most ideal instructors for the basic course are the emergency room staff, physician, nurse, and technician. In selecting instructors, trained ambulance and rescue personnel should not be overlooked, as some of the medical profession do not fully appreciate the specialized skills these technicians possess.

6. There are a number of distinct advantages in conducting these training courses in the local community hospital:

   a. Ambulance personnel will be more readily identified as an essential part of the emergency medical team;

   b. There is a built-in evaluation system of the training program by the condition in which patients are brought to the emergency room by the ambulance personnel;

   c. It is a simple matter to change the course direction or course emphasis to meet seasonal needs;

   d. New emergency care techniques or new equipment can easily be introduced into the training program; and

   e. Refresher courses can be offered to selected ambulance crews that lack a sufficient number of calls that are normally required to keep them alert to the variety of medical emergencies they may be required to handle.

7. A full-time staff will be needed to establish and coordinate these training centers and to assist in carrying out other projects of the overall statewide emergency medical services plan. A portion of the EMS staff could work out of the central office of the State agency designated the responsibility

for statewide, comprehensive EMS program development, or selected staff could be assigned to regions within the State. The work of the regional staff would be significantly reduced if the State authority had an active State emergency medical services advisory committee. The counterpart of the committee members at the local level should be formed into local councils. The local council should be delegated the responsibility for carrying out the various aspects of the statewide program with the cooperation and assistance of the regional coordinators.

8. Equipment and supplies that are the suggested material required for the training aids of each of the centers are shown in Exhibit X. Most of the equipment should last several years. If the supplies are purchased by the State agency, a worthwhile discount should be realized. There is no need to purchase an ambulance, as one can always be made available from one of the local services.

9. The State Agency should also purchase a supply of films and schedule them according to need. The following films may be considered and are available as indicated:

"EMERGENCY CHILDBIRTH". . . . .$ 85.00
- Division of Emergency Health Services
  Rockville, Maryland 20852
  Attention: Training Officer, Room 14A55
  Local Office of Civil Defense

"HEART AND CIRCULATION". 150.00
"PULSE OF LIFE". 250.00
"BREATH OF LIFE". 160.00
- State Health Department
- Local Heart Association
- American Heart Association
  44 East 23rd Street, New York, N.Y. 10010

"RESPIRATORY RESUSCITATION TECHNIQUES". . 280.00
- Society of Anesthesiologists
  P.O. Box 430, Bronxville, N.Y. 10708

"WONDER ENGINE OF THE BODY" 150.00
- American Medical Association
  535 N. Dearborn Street, Chicago, Ill. 60610

EXHIBIT X

BASIC EQUIPMENT AND SUPPLIES FOR A TRAINING INSTITUTE

(20 students per class)

Quantity	Item	Total Estimated (1971) Cost
2	SPINE BOARD, Short and Long with Accessories, @ $90.00 each . . .	$ 180.00
2	EXTREMITY SPLINT, Hinged, Half-ring, @ $40 ea.	80.00
2	ORTHOPAEDIC-TYPE STRETCHER, @ $100 each.	200.00
1	ARTIFICIAL VENTILATION DEVICE, Portable, manually-operated, self-refilling, portable bag-valve-mask unit that operates with either air or oxygen enrichment.	60.00
6	OROPHARYNGEAL AIRWAYS, Adult and Child, Child and Infant, @ $2.50 each	15.00
6	TONGUE BLADE, @ $1.25 each . . .	7.50
2	STAIR CHAIR, @ $70 each	140.00
1	OXYGEN INHALATION EQUIPMENT, Portable 300-liter capacity, equipped with yoke, pressure gauge, flow meter, delivery tube, and clear oxygen mask. Unit should be capable of delivering an oxygen flow of at least 10 liters/minute. .	75.00

EXHIBIT X
(Continued)

Quantity	Item	Total Estimated (1971) Cost
1	SUCTION, Portable. Should provide vacuum and flow adequate for pharyngeal suction. Fitted with large bore, non-kinking suction tubing and a rigid pharyngeal suction tip	$ 175.00
6	AIR SPLINTS, 3 Full-leg, 3 Full-arm, @ $15 ea.	90.00
3	STETHOSCOPE, @ $45 each	135.00
3	BLOOD PRESSURE MANOMETER, Cuff, @ $45 each.	135.00
1	4-Ton STARTER RESCUE KIT	185.00
1	PADDED BOARD SPLINTS, 3" x 15"; 36"; 54" 10 sets each.	150.00
2	ROPE SLING, @ $15.00 each	30.00
1	MISCELLANEOUS supplies for dressing, padding for wounds and fractures, oxygen refills	250.00
2	EXTRA OXYGEN TANKS, Size D, @ $20 each	40.00
2	O. B. KIT, @ $15.00 each	30.00
2	RESUSCI-ANNE, Complete with Cardiac Compression Equipment and Accessories, @ $185 each	370.00

EXHIBIT X
(Continued)

Quantity	Item	Total Estimated (1971) Cost
25	AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS TEXT, @ $4.95 each	$ 123.75
30	BASIC TRAINING MANUALS:	
	5 Instructors' Lesson Plans @ $2.00 each	10.00
	25 Courses @ $0.30 each	7.50
3	PRY BAR (Extrication), @ $5.00 each	15.00
5	BLANKETS, @ $5.00 each	25.00
	TOTAL, Approximate	$2,528.75

10. Where the training is provided by a physician or other professional staff member on a salary at the hospital, other institution or agency, the costs thereof and other expenses, e.g., travel, are considered to be participating costs.

C. Medical Self-Help Training.

1. A Medical Self-Help Training Program was designed to prepare the general population for survival by using their own knowledge in a time of a national disaster. The program was developed on the premise that families may not have medical assistance, normal food sources, water supplies or sanitation facilities, and may need to sustain themselves in a shelter environment for a prolonged period of time. This training program was developed by the Public Health Service and the Office of Civil Defense in cooperation with the American Medical Association, Council on National Security, and Committee on Disaster Medical Care.

2. The above training course was not designed for the instruction of ambulance personnel. If ambulance personnel wish to receive disaster emergency care instruction, it should be given after and apart from the DOT emergency care courses.

VII. MISCELLANEOUS

A. "Star of Life" Emergency Medical Care Vehicle-Ambulance Symbol.

1. This reiterates the adoption of the blue "Star of Life" emblem and mandatory use. This constitutes a change to section 7.3 of the ambulance design criteria which states, "a cross of reflectorized Omaha orange on a square background of reflectorized white . . . ." The blue "Star of Life" may or may not be reflectorized, however, reflectorizing is recommended. (See Exhibit XI)

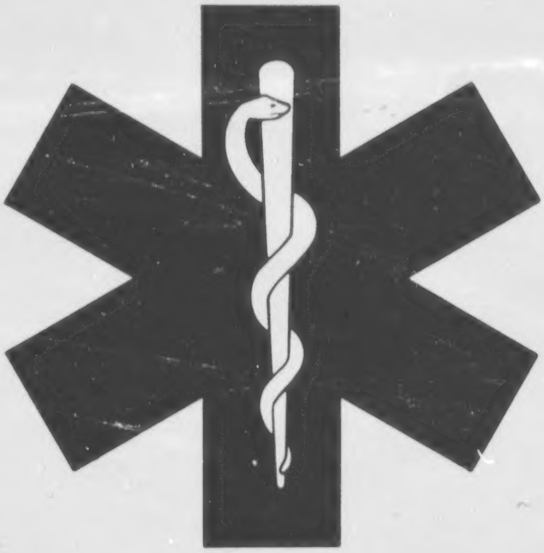
2. Investigation indicates that use of "a cross of reflectorized Omaha orange on a square background of reflectorized white" might violate a Congressional grant to the Red Cross of "the right to have and to use . . . as an emblem and badge, a Greek Red Cross on a white background, as the same has been treated in the treaties of Geneva" (33 Stat. 600, 36 U.S.C. S 2, January 5, 1905). In fact, Congress has passed

EXHIBIT XI

"STAR OF LIFE SYMBOL"

Emergency Medical Care Vehicle-Ambulance

The "Star of Life" is a six-barred cross upon which is superimposed the Staff of Aesculapius (es"cu-la'pi-us) who, in Roman Mythology, was the god of medicine and healing.



Dimensions:	Size A	Size B	Size C
Length of bar	3"	12"	16"
Width of bar	3/4"	3"	4"
Length of Staff	2-1/2"	9-1/2"	12-1/2"
White background (If required)	4" square	14" square	18" square

All exterior angles between bars - 60°

Deviations must be proportionate. May be reproduced and applied locally when authorized.

Title 18, U.S.C. S 706, Red Cross, which specifically prohibits, with several inapplicable exceptions, the use by any person of any sign or insignia made or colored in imitation of the Greek Red Cross on a white background. The orange cross specified by the National Highway Traffic Safety Administration (NHTSA) clearly is a "colorable imitation" of the Geneva Red Cross under the trademark appropriation law of the United States, and the Design Criteria, therefore, appear to encourage an imitation red cross for ambulances.

3. The Red Cross controls unauthorized use of their emblem by notifying users of the S 706 prohibitions and relying on their good faith to discontinue use. They believe the Department of Transportation (DOT) Criteria violate S 706 as "an insignia made or colored in imitation of the Greek Red Cross," consisting as it does of an identical geometric figure to the Red Cross utilized in a medical environment.

4. The most recent Red Cross Treaty Convention, "Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field of August 12, 1949," 6 UST 3114 (1955), allows peacetime use of the red cross" as an exceptional measure" on ambulances (1) with the express permission of the Red Cross and (2) in conformity with national legislation (6 UST 3114 Art 44). The Convention was ratified by the United States in 1955, but the use of a red cross by ambulances was not legislated.

5. It has been concluded by NHTSA that it is proper not to further interfere with the organizational identification provided by the Greek Red Cross. Rather, it is considered preferable to adopt a separate symbol which clearly and distinctively identifies the emergency care vehicle or ambulance within the total spectrum of the Emergency Medical Care system. The "Star of Life" has already been identified by the medical profession as a medical emergency symbol and its highway related use encouraged by the American Medical Association. Its use as provided for herein is also concurred with by the appropriate agency and its advisory council within the Department of Health, Education and Welfare.

6. This symbol is applicable to all ambulances purchased under the DOT/EMS program and criteria. It is also recommended and encouraged that the States employ this symbol for all ambulances (public and private) which meet DOT criteria for service or are in the process of upgrading and routinely respond to medical emergencies. Highway safety funds may be expended for the purpose of applying this symbol to all vehicles in use (public and private) which qualify as well as those which have already been procured under DOT criteria and funding assistance.

B. Color Standards and Tolerances-Emergency Medical Care System

1. The ambulance colors orange (stripe or band) and blue (markings) shall be the same as those specified as Safety Orange and Safety Blue in American National Standard Z53.1-1974, Safety Color Code for Marking Physical Hazards. They shall comply with the following tolerances expressed in terms of Munsell hue, value (lightness), and chroma (saturation) as follows:

   Ambulance Orange, 5.0YR 6.0/15 with tolerances in hue, value, and chroma of: Hue+, 6.25YR; Hue-, 3.75YR; Value+, 6.5; Value-, 5.5; Chroma+, unlimited; and Chroma-, 13.

   Ambulance Blue, 2.5PB 3.5/10 with tolerances in hue, value, and chroma of: Hue+, 4.5PB; Hue-, 10.0B; Value+, 4.0; Value-, 3.0; Chroma+, unlimited; and Chroma-, 8.

2. Color Tolerance Charts containing the color standards and tolerances for Ambulance Orange and Blue will be

available from the National Technical Information Service (NTIS), Springfield, Virginia 22151.*

3. Colors are specified by their Munsell notations. The Munsell System and its visual attributes of hue, value, and chroma are described in ASTM Method D1535 (American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103).

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*These Standard Safety Color Code color tolerance charts are available either as a set of two, Ambulance Orange and Ambulance Blue, or as the full set of six Safety Colors, Safety Red, Orange, Yellow, Green, Blue, and Purple. These Safety Colors are also Used in the marking of hazardous materials transported on the highways, by rail, water, or air. At a spill on a highway, Highway Safety Program Standard 16 - Debris, Hazard Control and Cleanup is the applicable standard.

(Standards controlling the cleanup of spills on railroads, at air crashes or other locations where ambulances would be called, should be added here).

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 11 Emergency Medical Services	TRANSMITTAL 36
CHAPTER V. Program Evaluation	April 15, 1974

(42-01)

Par. I. Introduction
II. Evaluative Measures
III. Methodology

I. INTRODUCTION

The purpose of program evaluation is to relate program results to objectives in order to determine program progress, effectiveness and guide future actions. The Standard requires that the State EMS program be periodically evaluated and that the NHTSA be provided with an evaluation summary. Such an evaluation is essential to assess the success of a program, to determine the soundness of its goals and objectives, and its current direction. It is a prerequisite to further planning or modification of existing plan elements.

II. EVALUATIVE MEASURES

A. Evaluative measures are basically qualitative and quantitative. A configuration of such measures should be developed that will give State EMS program managers the capability to evaluate the performance of each component of the system. Chapter IV, paragraph V, of this volume outlines in detail the establishment of a data system which would provide on a routine reporting basis data regarding EMS operations. This chapter and the guidance document, described in Chapter IV, set forth in greater detail performance measures useful for program evaluation.

B. Cost comparison evaluation should also be considered in the evaluation of alternative approaches to implementing specific program tasks.

III. METHODOLOGY

Once the EMS program is established and the EMS data system implemented, information provided by the data system will permit analysis at two levels. Inventory data can be used to assess the extent to which the State is making progress toward achieving the requirements of the Standard, as well as related State standards or requirements that may have been established. Response data can be used for a more precise identification of time delays in EMS performance. Over a period of time, both types of data will provide the basis for documenting system operations, identifying problem areas, measuring the impact of system modification, and evaluating effectiveness of the State EMS program. (Chapter VI suggests a method for structuring the evaluation process.)

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 11 Emergency Medical Services	TRANSMITTAL 36
CHAPTER VI. Reports	April 15, 1974

(42-01)

Par. I. Introduction
II. Operational Reports
III. Management Reports
IV. Program Evaluation Reports
V. Reports to National Highway Traffic Safety Administration

I. INTRODUCTION

An important aspect of the State EMS program is a data system to provide the necessary information on the capabilities and responsiveness of the EMS system. A series of management and evaluation reports should result from the data system which can be used to make program decisions and to evaluate the effectiveness of program actions. The purpose of this chapter is to outline the various types of reports associated with the State EMS program.

II. OPERATIONAL REPORTS

A. Local EMS committees can use operational reports received from the various EMS system components in a number of ways:

1. Information on individual emergency rooms can be used as a basis for plans for directing ambulances to the most appropriate hospital.

2. Information on characteristics of individual ambulance companies can be checked against requirements contained in local ordinances, regulations, and contracts.

B. The data system suggested for implementation by States, as described in Chapter IV, consists of two parts:

1. Inventory system.

   Reports should be required periodically for the inventory system to provide an up-to-date statement of capability. Reports should be required from each component of the EMS system in a reporting jurisdiction, indicating basic capability:

   a. Personnel (by level of training).

   b. Equipment.

2. Response data system.

   Reports should be required from each component of the EMS system for the response data system on each crash requiring EMS. These reports should describe injury characteristics, treatment, and system response.

3. Data Requirements.

   Previously issued guidance included information on the development of an effective emergency medical services program. The following is a specific listing of factors which should be used as a minimum in developing EMS programs; these factors and the degree to which the State annual and comprehensive programs reflect their application will be used in reviewing the programs and approving Section 402 Federal funds for EMS programs. These factors should also be utilized in the State evaluation of EMS programs. *

   a. General Data Elements - Ambulance. **

      1) Other ambulance operations - A record of other ambulance services (including number and type of

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*The GUIDANCE DOCUMENT FOR EMERGENCY MEDICAL SERVICES AND SURVEY AND PLAN DEVELOPMENT is available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22151, telephone (703) 321-8500, at $3.00 per copy. The Document Number is PB-192 735.

**See Appendix S.

vehicle and staffing) which operate within the federally-funded project response area, and whether or not the project service constitutes competition with such services, should be maintained.

2) Volume of calls - The total number of calls and the number which are traffic-connected should be recorded. Dry runs and false alarms which do not result in patient transport are responses, and are to be included in these totals. This includes transfers between facilities, if required for proper care of the traffic victim.

3) Response area - The area and the population of the response area should be recorded and a map maintained which shows roads and ambulance locations. States should ensure that one response area is not over-populated with ambulances while another is lacking.

4) Response time - Maintain a record of expected maximum response times (elapsed time between receipt of call by dispatcher and time of arrival at the scene) and any unusual conditions affecting this factor. The time of accident from the police report should also be recorded to obtain data on detection time. This will provide a continuum of time intervals for study and analysis.

5) Improvement - Maintain a record of how the existing service, if any, will be—or is—improved by a given Federally-funded project.

6) Hospital coordination - Consideration must be given to hospital coordination aspects, such as prearranged agreements for acceptance of emergency patients and exchange of equipment. Written procedures should exist for transfer of an emergency patient from a hospital of initial stop to another hospital.

b. Emergency Medical Technician Development - Personnel Training

1) All State and local projects which receive Federal funding assistance under Section 402 must maintain

the following information as a matter of record: (This information should be included in the State AWP submission to the extent feasible.)

a) Total AWP training requirements for basic and advanced training.

b) Estimated number of personnel to be trained during the grant, project or contract period.

c) Estimated number of ambulance personnel (full- and part-time) in the State, specifying the number of personnel paid and the number of personnel who are volunteers.

d) Courses to be used; if other than the recommended DOT Training Courses, describe and include total course materials, i.e., instructor outline and total hours of instruction, and justify substitution to the National Highway Traffic Safety Administration (NHTSA) Regional Office when submitting the Annual Work Program Subelement Plan and include in comprehensive EMS plans.

e) Description of course administration, including locations, schedule, and potential attendance in each location.

2) At the conclusion of the work plan, project or grant period, or in periodic reports, the following information must be available for submission to the NHTSA Regional Administrator:

a) Actual number of courses conducted.

b) Number of students in each location.

c) Number of students who were awarded certificates of completion in each location. (See Appendix R)

d) Retraining, certification and requalification requirements including recognition between contiguous States

e) Comments (difficulties encountered and any recommendations for improvement).

III. MANAGEMENT REPORTS

As the data system is implemented, a series of management reports should be developed to aid in effective program management.

A. Local (reporting jurisdiction).

Local EMS committees can evaluate system performance by using a series of EMS operational reports suggested in Annex 11 to Appendix II of the guidance document referenced in Chapter IV. For example, these committees may find variations in response time within the reporting jurisdiction which may indicate areas where additional ambulance services are required. Excessive time between crashes and their reporting in certain areas may suggest the need for additional surveillance or for installation of call boxes or other equipment. Deficiencies indicated by reports generated by the response data system can be checked with a report derived from the inventory data system, which, in its simplest form, is a printout of information provided by the EMS system components. This report may be compiled locally or at the State level.

B. State.

Reports summarizing inventory and response data system information for the various reporting jurisdictions provide the State EMS committee with a basis for assessing program operations. They also provide a basis for identifying either regional or functional deficiencies in EMS that should be explicitly considered in the State EMS plan. With this base, State-level decisions can be made regarding future plans and operations.

C. State summary.

Following the preparation of a preliminary comprehensive EMS plan (Step 4 in the plan development process as outlined in Chapter IV), the State should prepare a summary outlining proposed organization arrangements, scheduling, data use, and anticipated costs for the establishment of an EMS data system and for subsequent program analysis and evaluation, and include:

1. Indication of major problem areas.

2. Proposed legislative or administrative actions.

3. Special studies required for legislative decisions.

IV. PROGRAM EVALUATION REPORTS

The data system should include the means for evaluation of the results of program activities by local, State, and Federal governments.

A. Local (reporting jurisdiction).

Provision should be made for periodic updating of inventory information. The local EMS committee can therefore determine changes in training levels, equipment maintained, and emergency facility capability that have taken place during the period and can assess the extent to which program activities have contributed to these changes. The response data system should be continuous. Periodic reports on system operations can be used to evaluate specific program activities. Care should be taken, however, to allow for the effects of other highway safety programs that might have a bearing on the results.

B. State.

Periodic reports of response data should be prepared to assess the extent to which program activities, at the State or local levels, have improved EMS operations throughout the State and to identify continuing problem areas that may require new or unique approaches.

V. REPORTS TO NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

The NHTSA also intends to request each State to submit an annual evaluation summary as required by Section VIII of the Standard. The annual summary should include:

A. A brief statement of program activities during the year.

B. State level summary results of EMS system inventory characteristics, system response information, and general system performance, indicating changes since the previous summary.

C. Summary results of deficiency analyses at the local reporting jurisdiction level.

D. Problems requiring corrective action and type of action, planned or under way, to remedy these problems.

E. New development of action programs initiated since the State's previous summary.

F. Changes, since the previous summary, in State EMS programs and requirements (including legislative actions) and in program schedules, costs, and organizations.

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 11 Emergency Medical Services	TRANSMITTAL 36
CHAPTER VII. Local Government Participation	April 15, 1974

(42-01)

Par. I. Introduction
II. Local Public Agencies with Responsibilities for Providing Emergency Medical Services
III. Description of Activities

I. INTRODUCTION

Interest, cooperation, and active participation of local government agencies and other organizations and individuals at the local level are paramount to meeting the goals of the State EMS program. Local agencies play a decisive role in the development, implementation, and conduct of the Statewide program. The extent of their participation should be based on a self-analysis of capabilities and facilities. When it is evident that local agencies are unable to perform necessary functions, they should look to neighboring community or county or State organizations for assistance.

II. LOCAL PUBLIC AGENCIES WITH RESPONSIBILITIES FOR PROVIDING EMERGENCY MEDICAL SERVICES

The following local public officials and/or local public agencies should be considered to have an interest or responsibility for developing and managing an emergency medical services program.

A. Elected county and city officials and their immediate staffs.

B. Coordinating committee representing agencies with EMS roles and their immediate staffs.

C. Public safety authorities such as the police, fire or Coast Guard.

D. Health authorities.

E. Public service authorities such as hazardous cargo control or civil defense.

III. DESCRIPTION OF ACTIVITIES

Local public agencies are responsible for the following EMS activities:

A. Elected county and city officials and their immediate staffs.

1. Policy development.
2. Coordination of activities which are conducted by different agencies.
3. Encouragement of selected local private and volunteer groups including hospitals, ambulance services, and medical groups to cooperate and participate in EMS program development and operation.
4. Authorization or appropriation of funds necessary for EMS program operation.
5. Establishment, as appropriate, of EMS program planning and management staff.
6. Public information and education.
7. Adoption, as necessary, of appropriate ordinances and regulations governing EMS activities.

B. Coordinating committee representing agencies responsible for providing EMS. (See Appendix Q)

1. Establishment of EMS operating standards and requirements that are tailored to local needs and that reflect, and are consistent with, State policies and requirements.
2. Planning.

3. Periodic evaluation of adequacy of EMS.

4. A central point of authority for administration of the EMS program to include:

    a. Administration of established standards or requirements.

    b. Collection, initial processing, analysis, and reporting of EMS data.

    c. Identification of deficiencies, suggestions for action programs and priorities, and requests for financial assistance.

    d. Submission of reports to the State, as required.

5. Spokesman for political jurisdictions and local EMS operating components (an ambulance service, for example) in dealing with the State or other jurisdictions, e.g., for purposes of effecting mutual aid.

6. Point of contact and coordination with local proprietary and volunteer rescue squad organizations to promote understanding of and active participation in the EMS program.

7. A point of coordination among and between the health department and local organizations such as the Red Cross, civil defense or disaster office, medical association, hospital association, and ambulance association.

8. A central point for public relations and public information activities.

C. Public Safety, Coast Guard and Rescue Authorities.

1. Depending upon the EMS plan adopted locally, the following activities are often performed by either or both specially trained law enforcement or fire protection agency personnel.

    a. Ambulance dispatching.

    b. Ambulance command and control.

c. Ambulance service.

d. Rendering of emergency medical care.

e. Extrication of the injured.

f. Traffic control at the emergency scene.

g. Security protection of the injured.

2. Law enforcement personnel are usually involved in the detection and reporting of crashes and requesting emergency medical services. (Chapter IV describes in detail recommended ways to perform these activities.)

D. Health authorities.

Health authorities usually perform the following activities:

1. Evaluation and categorizing of emergency medical facilities.
2. Development and implementation of education and training programs for the public and for EMS personnel.
3. Investigation to determine present and future EMS needs.
4. Collection, management, and provision/distribution of EMS data.

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 11 Emergency Medical Services	TRANSMITTAL 36
CHAPTER VIII. Funding Criteria for 402 EMS Projects	April 15, 1974

(42-01)

Par. I. Ambulance Crew
II. Availability
III. Personnel Training
IV. Vehicle Data
V. Ambulance Procurement
VI. Communications
VII. Operating Costs
VIII. Cost Determination
IX. Charges
X. Existing Ambulance Service
XI. Funding Criteria Chart
XII. Specialized Advanced Medical Equipment

These criteria will be used by National Highway Traffic Safety Administration personnel in evaluating State Annual Highway Safety Work Programs and, specifically, EMS Subelement Plans. See Appendix A for standard implementation guidelines. The application of 402 funds must be viewed as the application of building blocks toward standard 11 implementation as set forth in Appendix A.

I. AMBULANCE CREW

To provide proper emergency care to the patient and observation en route, there must be a trained technician in addition to the vehicle driver.

II. AVAILABILITY

An effective project or service will have 24-hours-a-day personnel availability and service.

III. PERSONNEL TRAINING

Both ambulance crewmen (drivers and technicians) must be trained at not less than the DOT Basic Emergency Medical Technician Training Course or a described and approved equivalent. Ambulance technicians must be certified by a physician for use of the heart lung compressor, resuscitator, heart monitor, and cardioscope and defibrillator. (See Chapter IV, paragraph VI, and Chapter VIII, paragraph XII. Appendix R provides information on the availability and use of the NHTSA Certificate of Completion for all NHTSA Ambulance Technician Training Courses including dispatcher and extrication training.

IV. VEHICLE DATA

The State must record the number, type, and year of vehicles available for use within each response area. Data on backup vehicles, periodic safety checks, strategic spotting to reduce response time (time call received by dispatcher until vehicle arrives at the accident scene), and mutual aid agreements must be maintained. These will assist in obtaining a better understanding of the required operation. For equipment, see Chapter IV, Exhibit IV; for design criteria, see Chapter IV, paragraph III. B. 4.

V. AMBULANCE PROCUREMENT

A satisfactorily-equipped ambulance (see Chapter IV, par. IV. B. 2., of any of the general types can presently be procured within a total cost of $15,000. Therefore, only total vehicle costs not to exceed $15,000 will be eligible for Federal participation with Section 402 funds. This does not preclude purchase of an ambulance which exceeds $15,000 in total cost; however, that portion of total cost which exceeds $15,000 must be excluded in computing the Federal share. Used ambulances may be procured provided they conform, or are modified to conform, to the Federal Specification KKK-A-1822. All procurement must take into consideration the convenience and availability of service and maintenance. Credit for trade-in value must be given as an offset against the purchase price of a new vehicle or replacement vehicle.

VI. COMMUNICATIONS

Mobile and fixed communications equipment are eligible items, if such equipment is routinely used for EMS system communications. (See Exhibit I of Chapter VIII.)

VII. OPERATING COSTS

A. EMS system operating costs are eligible for participation only to the extent that they are incurred in traffic-related responses. Examples of such costs are personnel costs, vehicle maintenance, fuel and oil, office supplies and space, vehicle garaging, equipment maintenance, uniforms, etc. Traffic-related responses are those in which:

1. A vehicle or vehicles are involved;

2. Pedestrian/vehicle accident responses, those which do not result in patient transport, and responses to falsely reported traffic crashes. The transfer of a traffic accident victim from a medical facility unable to provide adequate care to a facility which can provide the needed care is eligible for consideration as a traffic response.

B. Federal participation is allowable for emergency ambulance service, traffic-related, operating cost items. These items must be net of applicable credits.

VIII. COST DETERMINATION

Any acceptable method of cost determination which meets the requirements outlined above may be used. Usually, past records are available to determine the percentage of total calls which are traffic-related responses. Such a percentage can then be applied to total operating cost to determine that part eligible for participation. The percentage is to be reviewed yearly and revised as appropriate. (An alternative method which might be considered—although it involves more record-keeping—is the individual costing of each traffic response to determine the total operational cost of the responses.) Records kept by the ambulance operators and dispatchers to determine the actual percentage of traffic responses is also considered a satisfactory basis for allocation of direct and indirect costs.

IX. CHARGES

Maintain a schedule of charges, any no-charge service provided, and estimated percent of non-collectable bills. If a contract is involved, describe the method of computation of cost, i.e., competitive bid, subsidy of uncollectable bills, etc.

X. EXISTING AMBULANCE SERVICE

An existing ambulance or rescue service must meet the requirements set forth in paragraphs I, II, and III above for any separate Federal funding for equipment, communications, or administrative and operational support. Federal funds may be used to participate in the replacement of the ambulance of such a service where the replaced ambulance does not meet design criteria and is either unserviceable or at least seven years old or has 70,000 miles. If the replaced ambulance was not obtained with Federal funding participation, it may be used as trade-in credit on the new vehicle. This is for the purpose of upgrading service for highway emergency responses. This provision does not apply to services which already have an adequate ambulance, which satisfies the criteria. It is expected that services which satisfy the criteria will continue to be maintained at Standard level without assistance; this permits the allocation of funds to help others meet critical needs.

XI. FUNDING CRITERIA CHART

Exhibit I shows fundable items and the funding criteria in chart form, as well as the basis for Federal participation in funding.

XII. SPECIALIZED/ADVANCED MEDICAL EQUIPMENT

A. It has been noted that Federal 402 funds are being utilized in purchasing specialized/advanced equipment such as defibrillators and EKG monitors. Defibrillators, EKG monitors and Telemetry equipment have been identified as fundable items if certain justifications are provided.

B. The following areas of concern should be properly addressed before 402 funds are used to purchase any of the above identified equipment.

1. Identify training needed by EMT's and set forth time schedule for receiving training. Ensure that personnel are appropriately examined before equipment is put into use.

2. Identify frequency of need.

3. Does the hospital approve of the proposed electrocardiogram monitoring capability? If so, a statement to this effect would be desirable as well as assurance that the

EXHIBIT I

FUNDABLE ITEMS AND FUNDING CRITERIA
(Not all inclusive)

Category	Item	Basis for Participation
PERSONNEL	Training	DOT Course. Equivalent must be described and justified.
	Public	Regular*
	Police and Firemen	Regular*
	Ambulance Attendants	Regular*
	Salaries	
	Ambulance Personnel (Technical and Administrative)	Factored**
	State Staff.	Regular (If exclusively EMS. If public health, community medical disaster planning included, the cost should be factored)
	PSD Administration	" " " " " " "
	Benefits	Factored**
CONTRACTUAL SERVICES	Appendix M, Vol. 11, HSP Manual	Factored (Equipment can be purchased by PSD on regular basis)

*Either sliding scale rate for public land States or 70-30 basis for others, whichever is applicable.

**Factored on the percentage of highway-related or percentage of time devoted to EMS.

EXHIBIT I
(Continued)

Category	Item	Basis for Participation
EQUIPMENT/ SUPPLIES	Communications Equipment	
	Two-way Radios (ambulance)	Regular
	Control-Base Stations	Regular
	Remote Sets	Regular
	Encoders-Decoders	Regular
	Portables w/ambulance	Regular
	Telemetering	Regular (Special training and justification required)
	Towers and Antenna	" " " " " " "
	Vehicles (ambulances and light rescue)	Regular rate applied to $15,000 limit
	Equipment	
	Medical	Regular
	American College of Surgeons	Regular
	Extrication	Regular
	Additional	Regular
	Sets Restraints	Regular
	Oxygen Tanks and Gauges	Regular
	Flow meters and Humidifiers	Regular
	Oxygen demand valve	Regular

EXHIBIT I
(Continued)

Category	Item	Basis for Participation
EQUIPMENT/ SUPPLIES (Continued)	Equipment (Continued)	
	Medical (Continued)	
	Hand-bag-valve Mask Units	Regular
	Pillows, Blankets	Regular
	Emesis Basin, Urinals, Bed Pans	Regular
	Thermometers, Thermos Jugs	Regular
	Sand Bags	Regular
	Blood Pressure Manometer	Regular
	Stethoscope	Regular
	Backboards, Long and Short	Regular
	Splints; Traction, Air, or Vacuum	Regular
	Stretchers, all types	Regular
	OB Kits.	Regular
	Special	Regular
	Incubators (premature baby)	Regular (Special training and justification required)
	Defibrillators	" " " " " " " "
	EKG Monitor & scope	" " " " " " " "

EXHIBIT I
(Continued)

Category	Item	Basis for Participation
EQUIPMENT / SUPPLIES (Continued)	Equipment (Continued)	
	Medical (Continued)	
	Special (Continued)	
	Heart/Lung Resuscitator, mechanical	Regular (Special training and justification required)
	*Office	Regular
	Desks, Chairs	Regular
	Typewriters, Adding Machines	Regular
	Furniture, sleep	Regular
	Wardrobes	Regular
	Cabinets	
	File; Storage; Supply	Regular
	Supplies	
	Medical (Expendable)	Factored
	Office (Expendable; postage)	Factored
OTHER DIRECT OR INDIRECT COSTS	Utilities	
	Telephone	Factored
	Heat; Electricity; Water	Factored

*Does not include draperies and floor coverings.

EXHIBIT I
(Continued)

Category	Item	Basis for Participation
OTHER DIRECT OR INDIRECT COSTS . . . (Continued)	Maintenance	
	Radio repair	Factored
	Ambulance repair	Factored
	Instrument repair	Factored
	Gas, Oil, and Lubrication . .	Factored
	Tires.	Factored
	Linens	Factored
	Facilities	
	Office Rental	Factored
	Garage Rental.	Factored
	Garage construction w/office space	Regular (Special justification)
	*Heliport	Regular (Special justification)
	Insurance	
	Personnel	Factored
	Equipment	Factored

*These are items of special consideration. To qualify for Federal participation, these items must be justified on the basis that they clearly provide a needed service which cannot be provided otherwise. They should be a part of the State program, and relevant economic considerations (trade-offs) must be evident in the justification. (Ref: TSP (42-14) memo of 4/7/70, File 7000, to Regions, on State Preparation of HS-1s for Helicopter Project Grants.) Heliports, elevator systems to roof top heliports, emergency rooms and other hospital-associated emergency medical care facilities are considered within the provisions of the "Emergency Medical Services Systems Act of 1973," Public Law 93-154, November 16, 1973.

emergency department will also be appropriately equipped and staffed to actively support this procedure.

C. The above considerations are not all inclusive, however, they serve to indicate the kinds of efforts that should be completed before approving a project for the purchasing of specialized/ advanced equipment for ambulances and the initiation of the procedures which they support.

XIII. DEPARTMENT OF AGRICULTURE (USDA) FUNDING ASSISTANCE

A. The Farmers Home Administration (FHA) is authorized to make loans to develop community facilities for public use in rural areas and towns of not more than 10,000 population. This might include loans for fire and rescue facilities and health and ambulance services. A fact sheet on community loans may be obtained from the State Director, Farmers Home Administration for each State. Information will also be provided by the Regional Administration, NHTSA (See Appendix N), and the Director, Community Facilities Division, Farmers Home Administration, USDA, Washington, D.C. 20250. This can be another resource and of considerable assistance to rural areas for upgrading EMS by ambulance purchases, communications development, facilities development, etc.

B. This program is to be coordinated with the NHTSA-EMS program and the Comprehensive EMS plan in each State. NHTSA-EMS criteria for Standard 11 implementation will serve as a basis for loan approval.

APPENDIX A

Highway Safety Program Standard 11

IMPLEMENTATION GUIDELINES

I. PURPOSE

To provide an emergency care system that will:

A. Provide quick identification and response to accidents.

B. Sustain and prolong life through proper emergency medical care measures, both at the scene and in transit.

C. Provide the coordination, transportation, and communications necessary to bring the injured and definitive medical care together in the shortest practicable time, without simultaneously creating additional hazards.

To be credited with initiating implementation of any part of the standard the State must be active in each subordinate achievement category. To have fully implemented any part of the standard the State must have completed action on each subordinate category including steps to insure perpetuity of the levels prescribed.

II. STANDARD

Each State, in cooperation with its local political subdivisions, shall have a program to ensure that persons involved in highway accidents receive prompt emergency medical care under the range of emergency conditions encountered. The program shall provide, as a minimum, that:*

A. There are training, licensing, and related requirements (as appropriate) for ambulance and rescue vehicle operators, attendants, drivers, and dispatchers.*

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*Italicized material provides interpretative guidelines for implementing Standard No. 11.

1. *That the DOT 81-hour course or DOT approved equivalent be established for EMT, Rescue and dispatcher personnel. That the DOT Extrication Course or DOT approved equivalent also be required and available for these personnel.*

2. *That legislation be enacted or regulations established by legally constituted authority for licensing of services, certification of personnel and established level of training.*

3. *That all personnel who have received training be encouraged to take steps to be enrolled in the National Registry.*

B. There are requirements for types and numbers of emergency vehicles including supplies and equipment to be carried.

1. *That an appropriate State agency has been designated with authority to set standards and implement this section.*

2. *That the ACOS essential equipment list is designated the minimum standard for all emergency ambulances.*

3. *That all emergency ambulances are required to satisfy published criteria and specifications as to type. The Ambulance Design Criteria and GSA FSS KKK-A-1822 are applicable documents and will be the standard.*

4. *That the numbers and locations of emergency ambulances to satisfy studied area needs for the State have been established.*

5. *Legislation as required.*

C. There are requirements for the operation and coordination of ambulances and other emergency care systems.

1. *That all emergency care resources (vehicles, services, personnel, organizations, etc.) have been identified.*

2. *That procedures are established for coordination of resources.*

3. *That the State is organized (districts, areas, etc.) to establish organization and control.*

4. *That regulations are established for the operation of ambulances including procedures for care and safe operation of emergency vehicles. Also to be included here are the requirements for two trained personnel on each ambulance run and 24 hour service availability.*

5. *Legislation as required.*

D. There are first aid training programs and refresher courses for emergency service personnel, and the general public is encouraged to take first aid courses.

1. *That a refresher training requirement for emergency medical technicians has been established and a program is operational.*

2. *That at least a 40-hour training course is available and promoted for emergency service personnel (Fire and Police) and the general public. The DOT Crash Injury Management Course for Traffic Law Enforcement Officers should be provided to all law enforcement personnel. American Red Cross First Aid Training should be promoted for the general public in support of the purpose of this standard.*

E. There are criteria for the use of two-way communications.

1. *That regulations require two-way communications between emergency ambulances and hospital emergency rooms and/or hospitals.*

2. *That frequencies for emergency ambulances be standardized to the fullest extent possible and selected to avoid net overload.*

F. There are procedures for summoning and dispatching aid.

1. *That emergency data numbers and information be posted on all telephones.*

2. *That designated emergency numbers be free numbers on pay phones.*

3. *That whenever feasible central dispatch systems be established for area service coordination and control.*

4. That the universal emergency phone number be promoted.

G. There is an up-to-date, comprehensive plan for emergency medical services, including:

a) Facilities and equipment.

b) Definition of areas of responsibility. (Include designations of authority.)

c) Agreements for mutual support.

d) Communications systems.

That a comprehensive Emergency Medical Services Plan be completed, approved and annually updated. The plan is to be developed in accordance with the published outline, Appendix O and give careful consideration to time phasing for accomplishment. (See Chapter IV paragraph 5 for additional information.)

H. This program shall be periodically evaluated by the State and the National Highway Traffic Safety Administration shall be provided with an evaluation summary.

That a program evaluation system be developed in accordance with Chapter IV, paragraph V and the published outline for comprehensive EMS plans, Appendix O.

APPENDIX B

GLOSSARY OF DEFINITIONS

This glossary defines those terms whose meanings may be unclear in the context in which they are used. These definitions are meant to apply only to the usage of these terms in this volume.

Area of Responsibility - A designated geographic area in which there is an assigned responsibility for the provision of emergency medical care.

Communications Link - A part of the communications system, fixed or mobile, which has radio or landline capabilities.

Communications System - A system connected closely with the dispatch center which, by radio or landline communications, makes possible the alerting and coordination of personnel, equipment, and the facilities of the highway emergency services system.

Definitive Medical Treatment - Treatment rendered by a qualified physician in any medical facility that provides timely and appropriate care.

Dispatch Center - A control or coordination center for the efficient management of all participating emergency resources within a designated area of responsibility. The center will dispatch personnel and equipment and coordinate and control these various resources to ensure maximum effectiveness.

Emergency Medical Care (EMC) - That care rendered by physicians or specially trained personnel.

Emergency Medical Services System (EMSS) - A system which, in the event of a medical emergency or injury on the highway, is capable of integrating detection and reporting inputs to provide timely dispatch of proper equipment and trained personnel for proper emergency care at the scene and en route, and safe and expeditious transport of the injured to a facility capable of providing the proper level of treatment.

EMS Staff - Individuals (at either the State or reporting jurisdiction level) who provide permanent staff support to the EMS committees in conducting the day-to-day activities and functions within the EMS program.

Emergency Medical Care Vehicles - Designated and properly equipped vehicular equipment (including aircraft) used in the transport of the sick and injured.

First Aid - Care administered at the scene by persons not directly connected with the emergency response.

Local EMS Committee - A group with policy advisory and technical advisory responsibility within a reporting jurisdiction that performs functions similar to those of the corresponding State-level committees. Membership includes both the medical profession and laymen so that communications, law enforcement, ambulance services, and hospital emergency services are represented.

Reporting Jurisdiction - A geographic area of defined boundaries for which there is an EMS committee or group and that forms the focal point for coordination with the State and for collection, initial processing, and reporting of EMS data to the State. A reporting jurisdiction may be a county, city, or group of counties (a region) and may include one or more "areas of responsibility," e.g., ambulance service areas.

Rescue Vehicle - Designed and properly equipped vehicles exclusively used for the rescue of persons entrapped in wrecked vehicles or other hazardous circumstances. Not a vehicle for carrying emergency victims.

State EMS Policy Committee - An advisory group usually chaired by the State health department director and having membership drawn from affected State departments such as police or highway patrol, motor vehicles, and education and from interested voluntary organizations such as State medical, hospital, and ambulance associations, the Red Cross, and other groups. The principal function of the committee is to advise State government in making policy decisions leading to the development of a Statewide EMS program.

State EMS Technical Committee - A working group made up of staff members from the State departments and other organizations represented on the policy committee. The technical committee's principal function is to assist the policy committee in developing a comprehensive EMS program and in evaluating effectiveness of program activities.

Doctor or Physician on Duty - The term "doctor on duty" means that one of the following criteria are being met.

1. Physician on duty within the emergency department.

2. Registered nurse on duty within the emergency department, with a physician in the hospital on call.

3. Registered nurse on duty within the emergency department, with a physician on call from his office or house.

NHTSA Approved Equivalent EMT-A Course of Instruction - A course of instruction which provides the same subject matter content and time allocation as the NHTSA course for which it is to be the equivalent. It must be reviewed and approved by NHTSA to be a satisfactory equivalent for both Federal funding and standard implementation.*

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*As a matter of example, some significant factors to be considered in judging equivalency to the 81 hour course are, (a) at least 81 hours total training, (b) included cardio-pulmonary resuscitation training, (c) included training in use of suction equipment, (d) inclusion of at least 10 hours in-hospital clinical training, (e) physician participation in training, (f) inclusion of all recognized basic EMT procedures. All of the above must be mandatory requirements of the equivalent course.

Based upon the above, courses listed below are not professional level equivalents to the DOT-81 hour course for the training of EMT-As and other personnel under Section I of Standard 11:

a. United States Bureau of Mines - First Aid
b. American Red Cross - Advanced First Aid and Emergency Care
c. Public Health Service - Medical Self Help

These courses as presently constructed, may be used and supported under Section IV of the standard to train the general public only.

APPENDIX C

REFERENCES

The following is a selected list of recognized authoritative references which may be helpful in implementing the programs specified in this volume. This list is not meant to be a definitive bibliography of all documents available in this field.

Ambulance Design Criteria. January 1973. For sale by the Superintendent of Documents—50¢. Order No. TD8. 2: Aml.

Communications, Guidelines for Emergency Medical Services. For sale by the Superintendent of Documents-$1.00. Order No. TD8. 8: EM3/4.

Concepts and Recommendations (Basic Training Program for Emergency Medical Technician-Ambulance). For sale by the Superintendent of Documents—35¢. Order No. TD2. 208: EM3.

Course Guide and Course Coordinator Orientation Program (Basic Training Program for Emergency Medical Technician-Ambulance). For sale by the Superintendent of Documents-35¢. Order No. TD2. 208: EM3/2.

Instructor's Lesson Plans (Basic Training Program for Emergency Medical Technician-Ambulance). For sale by the Superintendent of Documents—$2.50. Order No. TD2. 208: EM3/3.

Dispatcher, Emergency Medical Technician, Training Course. For sale by the Superintendent of Documents—60¢. Order No. TD8. 8: D63.

Highway Ambulance Service. March 1969. For sale by the Superintendent of Documents—65¢. Order No. TD2. 202: AM 7.

Patient Handling Manual for Emergency Medical Technicians-Ambulance. January 1972 (Reprinted August 1972). For sale by the Superintendent of Documents—60¢. Order No. TD8. 8: EM3/3.

Refresher Training Program for Emergency Medical Technician-Ambulance, Instructor's Lesson Plans. For sale by the Superintendent of Documents—$1.50. Order No. TD8. 8: EM3/2.

Refresher Training Program for Emergency Medical Technician-Ambulance, Course Guide. For sale by the Superintendent of Documents —35¢. Order No. TD8. 8:EM3.

Emergency Medical Technician Accident Victim Extrication Training Course, (To be announced in Fall of 1973). For sale by the General Services Administration.

Emergency Medical Technician Instructor Training Institute. Dunlap & Associates. Contract No. DOT-HS-099-1-141, June 1972, Final Report. For sale by the National Technical Information Service, Springfield, Va. —Order No. PB-211-924. - $3. 00.

Guidance Document for Emergency Medical Services Survey and Plan Development. 1970. For sale by the National Technical Information Service, Springfield, Va. Order No. PB-192-735 @ $3. 00.

Emergency Care Systems Demonstration Projects: (1968)
Volume I -----Summary, Conclusions, and
Recommendation. . . . . . . Order No. PB-179-847
Volume II ----The Emergency Care System . Order No. PB-179-848
Volume III----Operational Plans . . . . . . Order No. PB-179-849
Volume IV----Appendices . . . . Order No. PB-179-850
For sale by the National Technical Information Service, Springfield, Va. $3. 00 each volume.

Extrication Methods and Ambulance Operational Guidelines. (1969).:
Part 1 - Extrication Methods . . . . Order No. PB-184-904
Part 2 - Ambulance Operational Guidelines . Order No. PB-184-905
For sale by the National Technical Information Service, Springfield, Va. $3. 00 for each Part. (These are research reports and not training manuals.)

Economics of Highway Emergency Ambulance Service. (1968). For sale by the National Technical Information Service, Springfield, Va. Order No. PB-11-6541 $3. 00 per copy.

Emergency Ambulance Service—Demonstration Project, New York City, 1970:
Part 1 - Demonstration Project Methods
Employed in Study . . . . Order No. PB-195-053
Part 2 - Dispersal of Emergency Ambulances Order No. PB-195-054
A Demonstration and Analysis. For sale by the National Technical Information Service, Springfield, Va. $3. 00 each part.

Emergency Medical Service for an Urban Area. (1970) Demonstration Project, Detroit, Michigan:

Part 1 - Complete Report	Order No. PB-197-752
Part 2 - Summary	Order No. PB-197-753

For sale by the National Technical Information Service, Springfield, Va. $3.00 per part.

Consolidated System of Emergency Services, Demonstration Project 20/20, Nebraska, 1970, Final Report. For sale by the National Technical Information Service, Springfield, Va. Order No. 800-589. $3.00 per copy.

Air Medical Evacuation System (AMES) Demonstration Project Helicopter, 1970 Arizona:

Part 1 - Final Report	Order No. PB-193-724
Part 2 - Final Report Appendices	Order No. PB-193-725
Part 3 - Executive Summary	Order No. PB-193-726

For sale by the National Technical Information Service, Springfield, Va. $3.00 per part.

Coordinated Accident Rescue Endeavor-State of Mississippi (CARE-SOM) Helicopter Demonstration Project - 1971:

Part 1 - Operations Structure and Procedures	Order No. PB-199-756
Part 2 - Appendices	Order No. PB-199-757
Final Report	Order No. PB-204-999

For sale by the National Technical Information Service, Springfield, Va. $3.00 per part.

Helicopter Ambulance Service To Emergencies (HASTE) Demonstration Project, Minnesota, Final Report 1970. For sale by the National Technical Information Service, Springfield, Va. Order No. PB-200-308. $3.00.

Telemetry and Physician/Rescue Personnel Communication, Florida, 1971. An advanced emergency medical care system. For sale by the Superintendent of Documents. $1.75. Order No. TD-8.2:T23.

Accidental Death and Disability: The Neglected Disease of Modern Society. National Academy of Sciences, 1966. Fifth printing by the Commission on Emergency Medical Services, American Medical Association, Jan 1970.

Developing Emergency Medical Services - Guidelines for Community Councils. Commission on Emergency Medical Services, American Medical Association.

Helicopters In Emergency Medical Service NHTSA Experience To Date, Dec. 1972. For sale by the Superintendent of Documents, 40¢. Order No. TD 8. 2: H: 36.

Emergency Services - The Hospital Emergency Department in an Emergency Care System. American Hospital Association. 1972.

Emergency Care and Transportation of the Sick and Injured. American Academy of Orthopaedic Surgeons, Chicago, Illinois 60611. $4. 95.

Emergency Care Manual - A Systematic Approach. Burton A. Waisbren, M. D., Medical Examination Publishing Co., Flushing, N. Y. 11365. $7. 50.

Basic Rescue Cardiology - Cardiac EMT. Richard S. Crampton, M. D., Univ. of Virginia Medical Center, Charlottesville, Va. 22901. $4. 25.

Encyclopedia and Dictionary of Medicine and Nursing. Miller & Keane. 1972. W. B. Saunders Co., Philadelphia, Pa. 19105.

Emergency-Victim Care, 1971, State Dept. of Education, Division of Vocational Education, Columbus, Ohio 43210. $4. 50 plus postage.

Emergency Care. Robert J. Brady Co., Washington, D. C. 20002. $4. 95.

Emergency Medical Guide, Third Edition, John Henderson, M. D., McGraw-Hill Paperbacks, $3. 95 per copy.

First Aid and Emergency Rescue, Lawrence W. Erven, Glencoe Press, Beverly Hills, Calif.

Questions & Answers, Emergency Medical Services, 1973, U. S. Dept. of Transportation, Rescue and Emergency Medical Services Division, Washington, D. C. 20590. No charge.

Job Description - Emergency Medical Technician Ambulance, U. S. Dept. of Transportation, Rescue & Emergency Medical Services Division, Washington, D. C. 20590. No charge.

To Die or Not to Die - What is your Communities' Answer? Emergency Medical Services, 1973, U.S. Dept. of Transportation, Rescue & Emergency Medical Services Division, Washington, D.C. 20590. No charge.

Ambulance - Emergency Medical Care Vehicle, Federal Specification KKK-A-1822 GSA-FSS. 40¢ each.

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.)

(Single copies of this specification and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, D.C., Atlanta, Chicago, Kansas City, MO, Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.)

(Federal Government activities may obtain copies of Federal Specifications, Standards and Handbooks, and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

A Helicopter Ambulance Service - Do You Need It? Can You Justify It? Can You Afford It? 1973, Emergency Medical Services, U.S. Department of Transportation, Rescue and Emergency Medical Services Division, Washington, D.C. 20590. No Charge.

APPENDIX D

REPRESENTATIVE PROJECTS

A number of States currently have established comprehensive EMS programs. Consequently, a large number of the current projects under way in the States are involved with resource surveys and various aspects of plan development such as the drafting of necessary State legislation, the planning of State organizations, and staffing. Other projects deal directly with known EMS deficiencies and take the form of:

I. Ambulance service subsidies to enable continuation of service in areas with limited economic resources;

II. Support of training programs for ambulance and rescue personnel;

III. Providing first aid and Emergency Medical Care training for State employees;

IV. Securing Armed Forces helicopters for EMS;

V. Developing ambulance licensing programs;

VI. The upgrading and/or establishment of communications facilities;

VII. The evaluation of operative data systems.

VIII. Procurement of ambulances, equipment and supplies.

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*See Chapter VIII relative to funding criteria.

APPENDIX E

RESOURCE ORGANIZATIONS

This appendix identifies a number of organizations with an interest or involvement in the provision of emergency medical services (EMS). Several, upon request, are prepared to offer technical assistance to agencies establishing or operating EMS programs.

Ambulance Association of America
1629 K Street, N. W.
Washington, D. C. 20006

American Academy of Orthopedic Surgeons
Committee on Injuries
430 North Michigan Avenue
Chicago, Illinois 60611

American Academy of General Practice
Volker Boulevard at Brookside Boulevard
Kansas City, Missouri 64112

American College of Emergency Physicians
241 East Saginaw Street
East Lansing, Michigan 48823

American College of Physicians
4200 Pine Street
Philadelphia, Pennsylvania 19104

American College of Surgeons
55 East Erie Street
Chicago, Illinois 60611

American Heart Association
44 East 23rd Street
New York, New York 10010

American Helicopter Society
30 East 42nd Street
New York, New York 10017

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American Hospital Association
840 North Lake Shore Drive
Chicago, Illinois 60611

American Medical Association
Commission on EMS
535 North Dearborn Street
Chicago, Illinois 60610

American National Red Cross
17th and D Streets, N.W.
Washington, D.C. 20006

American Public Health Association
Injury Control & EMS Section
1015 Eighteenth Street, N.W.
Washington, D.C. 20036

American Society of Anesthesiologists
515 Busse Highway
Park Ridge, Illinois 60068

Department of Health, Education & Welfare
Health Services Administration
Emergency Medical Services Program
Federal Center Bldg. #3, Suite 320
6525 Bellcrest Road
Hyattsville, Maryland 20782

Helicopter Association of America
1156 15th Street, N.W., Suite 610
Washington, D.C. 20005

International Association of Chiefs of Police (IACP)
Highway Safety Division
11 Firstfield Road
Gaithersburg, Maryland 20760

International Association of Fire Chiefs
1725 K Street, N.W., Suite 1112
Washington, D.C. 20006

International Rescue and First Aid Association
P.O. Box 6218
Cincinnati, Ohio 45206

Joint Commission of Accreditation of Hospitals
200 East Ohio Street
Chicago, Illinois 60611

National Academy of Sciences-National Research Council
Division of Medical Sciences
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

National Ambulance & Medical Services Assoc.
P.O. Box 6
East Longmeadow, Massachusetts 01028

National Emergency Medical Services
Information Clearinghouse
Center for the Study of Emergency Health Services
Department of Community Medicine GA
University of Pennsylvania Medical School
36th and Hamilton Walk
Philadelphia, Pennsylvania 19174

National Funeral Directors Association
135 West Wells Street
Milwaukee, Wisconsin 53203

National Highway Traffic Safety Administration
Federal Highway Administration
Washington, D.C. 20591

National Registry of EMTs
P.O. Box 29233
Columbus, Ohio 43229

National Safety Council
425 North Michigan Avenue
Chicago, Illinois 60611

State and Territorial Health Officers Association
224 East Capitol Street
Washington, D. C. 20003

Vertical Airlift Council
Aerospace Industries Association, Inc.
1725 DeSales Street, N. W.
Washington, D. C. 20036

APPENDIX F

THE ECONOMICS OF AMBULANCE SERVICE

This appendix briefly summarizes a 1968 study on the economics of ambulance service and remuneration considerations based on Federal law.

I. SYNOPSIS OF THE STUDY

A. Introduction.

An NHTSA study, "The Economics of Highway Emergency Ambulance Service," is available which:

1. Summarized the status of ambulance services across the country.

2. Described the operational and economic impact of recent legislation and administrative regulations (particularly the 1966 Amendments to the Fair Labor Standards Act, Medicare, and Medicaid legislation and Standard No. 11) on all types of purveyors of ambulance services.

3. Developed methods for determining the optimum density of ambulance service locations and the numbers of ambulances needed to provide specified levels of service to communities or areas.

4. Developed a methodology for the Federal and State governments to use in computing equitable subsidies or financial support for nongovernment purveyors.

5. Prepared guideline information that local leaders can use in identifying and evaluating alternative solutions to their specific problems in providing an emergency ambulance service.

6. Considered the role that helicopter ambulances could play in providing services to remote rural areas and the related operating costs.

B. Methodology.

The study contractor used the techniques of systems engineering to determine the requirements and recommended combinations for transportation, emergency medical care, communications, dispatching, public safety agencies, and record keeping for various typical communities. This use of a systems concept allowed the contractor to analyze and compare the costs of ambulance services according to their common elements and functions irrespective of the specifics of their particular organizations or principal sources of revenue, and to establish a community's requirements for ambulance services and the size and probable costs of an adequate service independently of any questions of how to organize and support it. The analysis also provided a cost model that can be used to predict the probable costs of any ambulance service of specified size. Also analyzed are the pros and cons of alternative revenue structures to support ambulance service costs. The characteristics and conditions for effective subsidies were developed and the bases and formulae for computing the needed subsidies provided. A sequence of procedures is given so that the leaders of a community may determine or evaluate the number of ambulances and locations they need to answer all ambulance calls within specified "response" times and the estimated costs of such a service.

Guidelines were provided for identifying and evaluating the pros and cons of alternative organizations, sources of revenue, and community facilities for supporting adequate emergency ambulance services.

Copies of the study report may be obtained for $6 through the Clearinghouse for Federal Scientific and Technical Information, 5285 Port Royal Road, Springfield, Virginia 22151; cite document Nos. PB 178-837 (Vol. 1) and PB 178-838 (Vol. 2) produced under Contract No. FH 11-6541.

II. REMUNERATION CONSIDERATIONS

The Fair Labor Standards Act of 1938, as amended (29 U.S.C. 201, et seq.) provides for the establishment of fair labor standards in employments in and affecting interstate commerce, and for other purposes. The present (May 1968) minimum wage under this Act is $1.60 per hour. In an opinion signed by the Wage Hour

Administrator of the Department of Labor, May 23, 1966, it was held that, subject to certain exceptions, ambulance drivers and attendants making intrastate trips to pick up dead or injured victims of motor vehicle accidents on public streets and highways are engaged in interstate commerce within the coverage of the Act. Volunteer personnel operating volunteer ambulance services or rescue squads are not affected by the Act. When the ambulance service is operated by public or municipal employees (fire or police) the wages paid these individuals are set by local or State civil service policy and always exceed the minimum wage of $1.60/hour. (The impact of the legislation on any specific operation will be determined by the peculiarities of that operation.) For more information on this subject, inquire at the nearest office of the Wage and Hour and Public Contracts Divisions of the U.S. Department of Labor.

It is generally agreed that eight attendant/drivers are required, on the average, to support and operate one ambulance vehicle on a 24-hour, seven-day-a-week basis, assuming that both an attendant and driver are required for each run. Excluding any overtime pay, the annual personnel costs to support one vehicle on the basis of the present minimum wage amounts to about $26,600. If the vehicle operated is a stretched wheelbase modified passenger vehicle, acquisition cost is about $16,000. With depreciation continued over five years and annual maintenance/fuel costs of $2,000, it is evident that about $30,000 in annual revenue may be required just to break even. It is seen, therefore, that personnel costs represent the largest fraction of overall operating costs, especially if the ambulance vehicle is a carryall type at a purchase price of $4,500 complete with equipment. (Present day costs should be applied here.)

III. POSSIBLE FUNDING ASSISTANCE SOURCES

There are a number of Federal assistance programs and private sources which may be available for some degree of funding aid to EMS. Although comprehensive in scope, the list below is not complete and should be viewed as a starting point for considerations of funding sources.

A. Initial capital costs.

1. Hospitals from cash flow, funded depreciation, and philanthropic and endowment sources.

2. Philanthropy.

3. Borrowed capital, either normal commercial sources, or special low interest programs.

4. Partial financing through Hill-Burton in association with construction. (No longer available but other HEW funds may become available).

5. In connection with State Highway Safety Programs under Section 402 of Title 23, U.S.C.

6. Nonfederal governmental funds.

7. Nonprofit organizational funds.

8. Regional medical care programs.

B. Operating costs.

1. Training assistance from hospital, nonprofit organizations, regional medical programs, and vocational educational sources.

2. In connection with State Highway Safety Programs under Section 402 of Title 23, U.S.C.

3. Title XIX of the Social Security Act (Medicaid) - for emergency or transportational service units.

4. Title XVIII of the Social Security Act (Medicare) - for identified care and transportation units of service with some limitations that might be susceptible to change.

5. Insurance carriers - for emergency care costs that are included within hospital "overhead." (Some will pay for certain identified transportation costs.)

C. Capital replacement.

1. Funded depreciation.

2. In connection with State highway safety programs under Section 402 of Title 23, U.S.C.

3. Nonfederal governmental funds.
4. Nonprofit organizational funds.
5. Philanthropy.

NOTE: While some portions of this study are somewhat outdated many of the conclusions therein are considered valid for present day study and planning.

APPENDIX G

THE USE OF HELICOPTERS IN EMERGENCY MEDICAL SERVICES

I. INTRODUCTION

A. The purpose of this appendix is to provide general information related to the application of the helicopter for the benefit of those injured on the highway. Detailed information is available from the sources listed in the Bibliography, Exhibit II.

B. The ability of helicopters to provide effective and efficient transportation of the injured has been proved by military and search and rescue (SAR) applications. This use has shown that the helicopter is unsurpassed as a transportation tool in avoiding traffic congestion, speeding aid to the ill or injured in remote areas, and rapidly transporting the injured to medical care centers. A number of States and municipal governments have begun using helicopters. Others will undoubtedly follow as they become aware of the potential of the helicopter as an EMS vehicle. Many hospitals throughout the country have already installed heliports, and others are in the planning stage.

C. But it must be recognized that although the helicopter can be a useful supplement to an EMS system, it is not a cure for all problems and will not replace proper planning, equipping, training and staffing of other elements of the system. Careful planning and coordination among medical, police, and rescue personnel, manufacturers, purveyors, aviation agencies and municipal authorities are essential to make a helicopter system function effectively. Any viable system will cut across municipal, county, even state boundaries and coordinated action is required.

II. CAPABILITIES AND LIMITATIONS

A. The benefits to a patient which may be derived by use of a helicopter emergency ambulance instead of a ground ambulance are difficult to measure, and there is no standard against which to measure these benefits. The helicopter should not be used in cases where a surface ambulance is nearby and can transport the ill and injured as quickly to a nearby hospital. Certainly the use of a helicopter is not indicated unless serious injuries are involved. It should be used when seriously injured persons are in remote or inaccessible locations (which include traffic jams) where its arrival would be much quicker than surface transportation and generally in any instances when its use will materially expedite the arrival of trained personnel and medical supplies to the scene.

B. Interhospital transfers of patients, medical specialists, and critical medical supplies such as blood, organs for transplant, and special equipment might also be valid helicopter missions where time is critical. Some medical groups have discussed the feasibility of reducing the number of expensive but inadequate emergency rooms in small hospitals and bringing the ill or injured by helicopter to well prepared emergency departments at major hospitals. This proposal might have merit, but transport should not be limited to the helicopter. It should be used only when that mode of transportation would benefit the patient more than transportation by surface ambulance.

C. Despite its speed and ability to fly to its destination in a straight line, a helicopter, on the average, cannot reach the scene of a medical emergency in an urban or suburban area ahead of a ground ambulance dispatched simultaneously from a well deployed fleet of vehicles. Furthermore, in highly developed areas, the presence of poles, overhead wires, tall buildings, and heavy street traffic tend to delay or preclude a helicopter landing, unless a trained controller is at the scene to point out obstacles, control traffic, and guide the helicopter by means of hand signals and/or direct voice communications. There is, however, considerable potential for use on urban freeways since surface traffic congestion can be avoided. It is evident from this discussion that the helicopter would be the proper response vehicle in an urban or suburban area in only a small percentage of the total number of emergencies.

D. Helicopter ambulances have the greatest potential in rural areas, where the response time of a conventional ambulance service is relatively long, and where the presence of open areas will permit unassisted helicopter landings and takeoffs. But rural areas are also characterized by a relatively small population base. The frequency of occurrence of medical emergencies will therefore be relatively low within the effective operating radius of a helicopter during any given time period.

E. Because of the infrequent demand for emergency helicopter ambulance transport, in all potential operating areas, coupled with the high initial investment cost and relatively high operating costs, fixed costs especially, the helicopter is an extremely expensive method of transporting patients. A standby helicopter ambulance program, with a helicopter parked at a medical center, prepared to answer emergency calls, is neither feasible nor recommended. The substantial costs can be justified, however, if the helicopter is operated as a supplement to existing ground ambulance and law enforcement operations. Medical emergency service must be combined with services for other agencies, such as law enforcement, patrol, or surveillance, without sacrificing the medical capabilities or priorities of the system.

F. Travelling by helicopter imposes a certain degree of vibration and roughness on the passengers. When comparing this to the roughness and vibrations encountered in riding in a ground ambulance, it is necessary to consider the smoothness and contours of the roadway. Any rough movement, vibrations or sudden jerks of a patient cannot help but bring him further discomfort or add to the severity of his condition. Relative to the ground ambulance, the helicopter is rated less detrimental on rural or remote missions and more detrimental on urban missions.

G. It must be recognized that there are severe weather conditions in which the helicopter should not operate and that night operations in mountainous terrain or close to surface obstructions is dangerous. Wires over and adjacent to the highways are hazardous to EMS operations, and there is danger in landing near crowds without proper crowd control. However, severe weather, mountainous terrain, and dense jungle have all been successfully surmounted by helicopters in providing medical evacuations in Vietnam.

H. The availability of helicopters for response may be limited for mechanical reasons. The average mechanical "out-of-service" time has been found by the Coast Guard and Army to be approximately 25 percent, producing 75 percent availability for one helicopter. If two machines are devoted to the mission, availability rises to 94 percent, and if three are available, at least one will be able to respond 98 percent of the time.

III. HELICOPTER AMBULANCE DESIGN

A. The type of helicopter selected for emergency ambulance use will have a bearing on the outcome of any helicopter emergency ambulance project. There are many types available today. Few are suitable and none can be considered ideal. Specific design criteria are not available but studies recognize certain requirements which must be considered by the planner.

B. In addition to the pilot, the helicopter should be large enough to carry two litter patients, a medical attendant, medical equipment and supplies inside the cabin. The medical equipment and supplies must be easily accessible in-flight, and the cabin should have sufficient space to permit in flight aid to the patients. The patients must be isolated from the pilot's compartment to prevent in-flight distractions which would affect flight safety.

C. Low cabin noise and vibration levels are desirable for maximum patient comfort and for effective use of blood pressure, heart, and other monitoring devices. Turbine power is essential to minimize dispatch time after alert. Performance considerations, such as range, speed, high altitude and instrument flight capability will depend on the operating area.

IV. SURPLUS MILITARY HELICOPTERS

A. This source might appear to be the answer to high helicopter procurement costs. But this bargain could be "booby-trapped" with expensive pitfalls.

B. Before an Airworthiness Certificate can be obtained for any ex-military aircraft, the buyer, not the Federal Aviation Administration, not the Army, not the people who actually sold the airplane, but the buyer, must obtain on his own FAA Type Certificate or be able to show that it conforms to an existing civilian model that has an FAA Type Certificate, and the buyer must prove that it is in a condition for safe operation (airworthy), before it can be flown.

C. Many military aircraft do not conform to any existing civilian Type Certificate, and some can never be made to conform, regardless of modification. The Department of Defense does not represent that surplus aircraft offered for sale are or can be certificated as airworthy.

D. It is difficult, perhaps impossible, to assess the actual airworthiness limitations of a surplus aircraft that has undergone various modifications and parts replacement, as well as maneuvers that could have overstressed the airframe.

E. An honest effort must be made to estimate the time and money that may be required before this "bargain" helicopter can be certificated and pronounced airworthy. The process might take months, even years, and the ultimate cost could exceed that of a comparable used civilian helicopter.

F. Certification is initiated by application to the nearest FAA-EMDO (Engineering and Manufacturing District Office). These are called AEDOs (Aircraft Engineering District Offices) in the FAA Western Region. It would be advisable to consult with these experts prior to the purchase of any surplus military aircraft.

V. HELICOPTER EMS EQUIPMENT

The American College of Surgeons (ACS) Essential Equipment List for Ambulances (Exhibit IV, Chapter IV) can be used as a guide in the outfitting of EMS helicopters. Weight may be a factor in smaller helicopters and reduction to allowable limits can be accomplished with the recommendation of a properly qualified physician. Some helicopters, mostly military, have hoisting capability and can, if necessary, lift the injured into the helicopter without landing. If the helicopter is hoist-equipped, a hoisting container such as a stokes litter is needed. In the case of military helicopters, the standard equipment for medical evacuation flights is usually established by the base medical department and placed in the helicopter by flight medical personnel.

VI. HELICOPTER EMS PERSONNEL

Perhaps the most important action in aiding a person injured in a crash is timely and proper emergency care at the crash scene. The provision of a trained medical attendant on board the helicopter with the necessary emergency care equipment is essential to the success of the mission. If a medical attendant or physician is not available, the helicopter crewmen must be proficient in emergency care. Training requirements for medical personnel assigned to EMS helicopters do not differ greatly from that desired for the surface ambulance counterparts. The Department of Transportation, National Highway Traffic Safety Administration 81-hour "Basic Training Course for Emergency Medical Technician - Ambulance" is recommended. This course has been adopted by 46 States and the District of Columbia. A 20-hour refresher course is also available for periodic review of skills learned from the basic course. Three additional courses have been developed for the dedicated career technician:

A. Accident Victim Extrication (two day) Training Course.

B. Dispatcher Training Course.

C. Advanced Training Course for Emergency Medical Technicians (480 - hour). This course is being pilot tested as of the date of this writing.

VII. COMMUNICATIONS

A. Rapid and reliable communications capabilities are an absolute requisite if the potentialities and advantages of helicopter ambulances are to be realized. The greater the number of functions required of the helicopter, the more versatile the radio communications equipment must be. Two factors are involved: first, the need to alert the operator to dispatch a helicopter and, second, the need for the helicopter to communicate with the control facility, personnel at the scene of the accident, and the hospital during the course of the mission.

B. The helicopter operating activity should be alerted by direct landline from the EMS dispatching center or designated alternate such as a law enforcement agency. Once alerted and given position information, the regular air-to-ground radio equipment is available for control and relay of additional information to the helicopter. Practical experience has demonstrated that while a direct means of communications from the scene to the helicopter is desirable, it is not mandatory. Some of the handicap created by the lack of direct communications between the helicopter and the crash scene can be eliminated by police indoctrination in helicopter hand signals and landing requirements. The ability to communicate with the hospital provides for enroute medical care advice for the attendant, alerting hospital personnel to the condition of the accident victim, and advising the hospital of any change in the expected time of arrival.

VIII. USE OF MILITARY HELICOPTERS

A. Military helicopters, when requested by a State, are only assisting units and do not relieve a State of its overall responsibility.

B. There are military helicopters for search and rescue (SAR), or local base rescue missions at some 130 different sites in the country, mostly around the nation's coastal perimeters and southern border. Helicopters are based at other military bases for training, logistics, and mission operations. A SAR helicopter unit maintains constant readiness and spends the greater part of its time standing by for calls. Flying hours devoted to SAR seldom exceed 25 percent of the total hours flown. Consequently, some of these units are able to take on additional responsibilities without any increase in facilities or personnel. They are well trained in SAR, and the recovery of the highway ill or injured presents few problems not found in SAR missions.

C. In actual practice, military rescue helicopters respond to a variety of emergencies and do not confine themselves strictly to military distress operations. For example, responses are regularly made to boating mishaps, lost hunters and fishermen, civilian aircraft crashes, medical evacuation from remote locations, etc. There appears to be no legitimate reason to exclude persons seriously injured on the highways from assistance that is provided to citizens in nearly any other locale, nor to assign them a lower priority due to the nature of their misfortune.

D. As a general rule, there are no agreements between State authorities and Armed Forces commanders for assistance in highway emergencies, even though agreements are common for other emergency situations. Communications and rapid alerting constitute one area of deficiency. Operating procedures and plans also need to be discussed and outlined.

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Agreements on military-State cooperation should be negotiated at the local level, taking into consideration the particular needs and limitations of both parties. Many of the elements pertinent to State-military agreements are suggested in the checklist contained in Exhibit I (this appendix). Although this concept is aimed at highway EMS, any agreement should not be restricted to that one facet of EMS but should cover other applicable emergency transportation requirements. The scope of military assistance can be best determined on an individual case basis. Military helicopters should be requested only in urgent cases, where existing surface ambulances are unable to accomplish the job quickly or efficiently, where medical help is urgently needed and prevented from reaching the crash scene, and when suitable public service or commercial helicopters are not available.

E. The United States Coast Guard has authorized its District Commanders to enter into agreements with the States to provide mutual cooperation and coordination of available facilities for providing emergency medical services. Similar agreements might be authorized by State Governors for National Guard helicopters to provide assistance in serious emergency medical situations.

F. Military Assistance to Safety and Traffic (MAST) is a program using military helicopters and medical corpsmen as a supplement to an existing local emergency medical service system for the purpose of providing assistance to civilian victims of traffic accidents and other serious medical emergencies. Existing equipment and personnel from active duty military units are involved. These military personnel work in cooperation with local health care providers and law enforcement officials according to a locally developed plan between the civilian and military communities. At the present time only U. S. Army Aeromedical Units and U. S. Air Force Aerospace Rescue and Recovery Detachments have the capability and resources to participate. Planned future expansion of the program could identify some Navy and Marine Corps capability, but this is indefinite at this time. The program is sponsored by five government agencies forming the MAST Interagency Executive Group, with administration assigned to the MAST Interagency Coordinating Committee. This committee is comprised of representatives from the Departments of Transportation, Defense, and Health Education and Welfare.

Unfortunately, MAST is available to only a limited number of communities. Only existing military units located at existing military bases can participate. No equipment or personnel can be relocated, nor can new units be established solely to support the MAST program. No additional funding is provided. MAST operations are conducted by using funds allocated for training. Simulated training exercises are replaced by actual medical assistance missions, providing a valuable service to the community, and realistic experience and motivation for the military organization.

Detailed information about this program can be obtained by writing the Executive Secretary, MAST Interagency Executive Group, National Highway Traffic Safety Administration, N42-15, 400 7th St., N.W., Washington, D.C. 20590.

EXHIBIT I

TABULATION OF CONSIDERATIONS IN STATE-MILITARY AGREEMENTS ON CIVILIAN MEDICAL EVACUATIONS

1. WHAT MILITARY FACILITIES ARE AVAILABLE?
    a. Helicopters
    b. Ambulances
    c. Hospitals (include status of emergency department)
    d. First aid stations or dispensaries
    e. Medical personnel
2. HOW IS MILITARY TO BE ALERTED?
    a. Who receives call on base?
    b. What State agency initiates call?
    c. Are added communications links needed? (If so, will this be locally or State-funded?)
    d. Will calls be accepted from only one State agency (e.g., State Police) or from any police agency? How about calls from citizens? If calls are accepted from State Police only, how do other sources get help?
3. PARAMETERS OF MILITARY HELP.
    a. Hours of operation
    b. Readiness condition and response times during 24-hour day and during days of week
    c. Limits of area of coverage

EXHIBIT I
(Continued)

d. Conditions in which military help will not be available (i. e., overriding military commitments, mechanical failures, weather and environmental conditions, etc.)

e. Means to minimize unnecessary calls or false alarms

f. Agreement on reducing military participation if load becomes excessive

4. MEDICAL PERSONNEL.

a. Are military physicians available to accompany helicopter? Medics or hospital corpsmen?

b. Do helicopter aircrews have emergency care training?

c. Can services of civilian physicians to accompany helicopter be arranged?

d. Can arrangements be made for a physician to accompany seriously ill or injured patients on a hospital-to-hospital transfer?

e. Who pays civilian physician?

f. What about liability for injury to patients and physicians being transported? Waivers of liability?

5. MEDICAL EQUIPMENT.

a. Can appropriate medical equipment be prepackaged and ready to go on the helicopter?

b. Who provides original equipment? Replacements?

EXHIBIT I
(Continued)

6. COMMAND AND CONTROL.

Military help is only a supplement to State resources, and the State retains ultimate responsibility for the evacuation of persons injured on the highway. How will coordination be exercised? Who will make the decision as to which hospital is to be used? How is mission to communicate with military bases and helicopters? What are arrangements for coordination on-scene? How are positions of crashes to be described? Grid systems?

7. HELISTOPS.

Where will hospital helistops be provided? (These should, usually be State- or community-funded and laid out after approval by helicopter operators.) What arrangements for training of emergency room personnel and helicopter crews in cooperation?

8. MEDICAL TREATMENT BY HELICOPTER CREWS.

In addition to normal emergency care practices, will medics or corpsmen be permitted to administer fluids or drugs in emergencies? Will State medical society back this? Will helicopter crews be prepared to render emergency care on scene prior to moving? Will State agree to request "Good Samaritan" law if not already in force?

9. WHAT TYPES OF CASES WILL BE CARRIED?

a. Injured from highway to nearest hospital?

b. From highway to major medical center (bypass local hospital)?

c. From community hospital (after stabilization) to major center for definitive treatment?

EXHIBIT I
(Continued)

d. Other critical medical emergencies to hospital where ambulance unsuitable?

10. COMMUNICATIONS.

a. Will State undertake to advise all potential users (local police, hospitals, doctors) of availability of helicopter service, how to obtain it, and limitations of service?

b. Who will fund and install necessary communications? Will State or military undertake to clear any FCC problems, including licenses?

11. REPORTS.

If military command does not already have requirement to submit report of each case to own headquarters, will they make a brief narative report to the State on each air evacuation?

EXHIBIT II

BIBLIOGRAPHY

The following publications are available from:

National Information Technical Service
5285 Port Royal Road
Springfield, Virginia 22151

Economics of Highway Emergency Ambulance Service, Dunlap and Associates, Inc. (1968) — DOT/HS 003-295, NTIS/PB 178-837, Contract No. FH-11-6541.

Emergency Care Systems Demonstration Projects, Franklyn Institute Research Laboratories (1968)—DOT/ HS 800-006 thru 009 (4 volumes), NTIS/ PB 179-847 thru 850 (4 volumes), Contract No. FH-11-6596.

Commonwealth of Pennsylvania, Helicopter Ambulance Study. May 1969. Final Report. Project EMS 68-1-001. Robert R. Coleman, Project Director, Pennsylvania Department of Highways. DOT/HS 008-477, NTIS/PB 197-240.

Nebraska Air Ambulance Project, Operation Sky-Aid July 1969, Final Report. Project EMS 68-1-001, 002. Paul R. Haith, M. Ed., Project Coordinator. DOT/HS 008-478, NTIS/PB 203-293.

Emergency Medical Services for an Urban Area, City of Detroit (1970), Final Report. DOT/HS 800-418, NTIS/PB 197-752. Contract No. FH-11-6901.

Air Medical Evacuation System (Ames), Arizona State University (1970), Final Report. DOT/HS 800-267, NTIS/PB 193-724; Appendix DOT/HS 800-268; NTIS/PB 193-725. Contract No. FH-11-7090.

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Helicopter Ambulance Service to Emergencies (HASTE). Metropolitan Inter-County Council, Minnesota (1971), Final Report. DOT/HS 800-495, NTIS/PB 200-308, Contract No. FH-11-7128.

Coordinated Accident Rescue Endeavor, State of Mississippi (Caresom), Mississippi State University (1970), Final Report. DOT/HS 800-460, NTIS/PB 199-756; Appendices DOT/HT 800-461, NTIS/PB 199-757, Contract No. FH-11-7146; and Extension of Project CARE-SOM, Final Report (1971), DOT/HS 800-584, NTIS/PB 204-999; Contract No. HS 019-1-020.

Emergency Medical Service System, University of California-Los Angeles, DOT/HS (to be published): NTIS/PB (to be published), Contract No. FH-11-6849.

The following publications are available at the price indicated from:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

MAST, report of test program, Interagency Study Group, July-December 1970, GPO Stock NR. 1727-0030. 45 cents.

Helicopters in Emergency Medical Service, NHTSA Experience to Date, Dec. 1972, USGPO:1972, TD-8.2: H36, S/N 5003-00112, 40 cents.

Heliport Design Guide, Department of Transportation, Federal Aviation Administration, Airports Service, Nov. 1969, USGPO:1969, Advisory Circular 150/5390-1A, 75 cents.

Helicopter Ambulance Services - Do you need it? Can you justify it? Can you afford it? EMS, U.S. Department of Transportation, Rescue and Emergency Medical Services Division, Washington, D.C. 20590.

APPENDIX H

OUTLINE OF MATERIAL FOR AMBULANCE PERSONNEL TRAINING

The Committee on Emergency Medical Services, National Academy of Sciences-National Research Council (NAS-NRC), produced outlines on which this appendix is based in the form of guidelines entitled "Training of Ambulance Personnel and Others Responsible for Emergency Care of the Sick and Injured at the Scene and During Transport" and "Advanced Training Course-Emergency Medical Technician-Ambulance." These guidelines and recommendations by the NAS-NRC Committee on a course of action to develop a nationwide training program were the basis for the development of the present 81-hour DOT Basic Training Course for Emergency Medical Technicians.

GUIDELINES FOR BASIC TRAINING OF AMBULANCE PERSONNEL

(81 hours)

SECTION ONE - EMERGENCY CARE

I. ANATOMY AND PHYSIOLOGY

  A. Musculoskeletal System

  B. Nervous System

  C. Respiratory System

  D. Circulatory System

  E. Genitourinary System

  F. Gastrointestinal Tract

  G. Abdomen

  H. Skin

I. Eye

J. Topographic Anatomy

II. VITAL SIGNS AND THEIR SIGNIFICANCE

Normal ranges of vital signs and abnormalities related to injuries and other emergencies, to include pulse, respiration, blood pressure, skin temperature, color of skin and mucous membranes, pupils, states of consciousness, paralysis, and reaction to pain.

III. LIFE-THREATENING EMERGENCIES

A. Airway Maintenance, Artificial Ventilation, and Oxygenation.

B. Cardiac Arrest and Cardiopulmonary Resuscitation. Instruction as prescribed by the American Heart Association.

C. Bleeding. Pressure dressings, pressure points; emphasis on strict limitation on use of tourniquets.

D. Shock. Include administration of intravenous fluids.

IV. INJURIES

A. Wounds - General.

1. Definition - Open, closed; abrasion, puncture, incision, avulsion; penetrating, perforating.
2. General Effects - Interference with function; shock.
3. Local Effects - Hemorrhage, external, internal; interference with blood supply; destruction; foreign bodies; contamination.

B. Injuries of Bones and Joints

Under each heading, instructions as appropriate on techniques of handling extremities, methods of moving victim, dressings, splinting, traction, positioning during transport; emphasis on treating sprains and strains as if they were fractures or dislocations.

1. Fractures and dislocations of upper extremities
2. Fractures and dislocations of lower extremities
3. Fractures and dislocations of spine
4. Fractures of pelvis

C. Injuries Other Than of Bones and Joints.

Under each heading, instructions as appropriate on airway obstruction, cardiac arrest, hemorrhage, techniques of moving, release from impalement, dressings, splints, positioning, preservation of avulsed parts (ear, nose, digits, extremities) and possible complications during transport.

1. Scalp and skull
2. Brain
3. Eye, ear, nose
4. Face and jaws
5. Neck
6. Chest
7. Abdomen, pelvis
8. Genitalia
9. Back
10. Extremities

V. BURNS

VI. ENVIRONMENTAL EMERGENCIES

Instruction as appropriate on prevention of additional injury, methods and hazards of removal from environment, initial care, contamination, possible cardiopulmonary complications during transport.

A. Exposure to Cold

B. Exposure to Heat

C. Exposure to Radiation

D. Electrical Injuries

E. Near-Drowning

F. Explosions

VII. ACUTE POISONING

VIII. MEDICAL EMERGENCIES

Fainting; stroke, heart attack; convulsions; acute alcoholism; diabetic states; perforated viscus; hemorrhage; asthma; emphysema; nosebleed; shock; unconscious states; allergic reactions; urinary retention; strangulated hernia; protracted vomiting; drug withdrawal; spontaneous pneumothorax; communicable disease (special emphasis on pediatric emergencies).

IX. EMERGENCY CHILDBIRTH

X. MANAGEMENT OF EMOTIONALLY DISTURBED AND UNRULY

SECTION TWO - AMBULANCE SERVICES

XI. PERSONNEL

Effective service requires proper attitudes and conduct in work; show of responsibility: skills obtained by experience and training; acting within limitations of capabilities.

Both attendants and drivers must be equally trained in each other's duties and responsibilities so that they may function interchangeably or independently in caring for multiple casualties.

A. Duties as an Attendant

Personal Attitudes and Conduct:

1. Professional Manner - Definition; ethical standards required; control of emotion; courtesy; tone of voice; refrains from smoking while engaged in duties related to care of patients; uses appropriate topics of conversation.

2. Personal Appearance - Hygiene and grooming; proper wearing of uniform; identifying insignia.

3. General Conduct - Shows interest in job; concern for injured; "common sense" care; teamwork efficiency; prevents embarrassment to injured; gives reassurance to injured; uses injured's resourcefulness in helping himself; shows responsibility for his safety, self, others; cooperation.

4. Response to Injured's Need for Religious Comfort in Face of Death - Obligation to notify clergyman when requested.

5. In Cases of Apparent Death or Deaths - Definition of death; examines for signs of death; where death is certain, moves body in accordance with local ordinances or regulations; for ethical and humanitarian reasons, remains with deceased until arrival of police, a medical examiner or coroner; shows courtesy, respect, and consideration in handling and exposure of the deceased.

6. Disclosing Bad News - Creates proper atmosphere; displays attitude to mitigate bad effects; demonstrates sympathetic air.

Responsibilities to the Ill or Injured:

7. Prompt and Efficient Care - Performs lifesaving measures; provides for safety and protection; gives all possible emergency care when extrication is delayed; undertakes extrication to permit emergency care; avoids undue haste and mishandling; searches for medical identification emblems.

8. Preparation for Transport to Hospital - Immobilizes injured parts; prevents disturbance and exhaustion before transport; makes sure of the cooperation of the person being transported; ensures optimal preparation before decision to transport; protects his valuables.

9. Continuing Care En Route and Delivery to Hospital Emergency Department in Best Possible Condition - Rides in compartment with the ill or injured; continually observes and protects; administers fluids and other measures as instructed or indicated; reports changes in condition during transport.

10. Skill in the Use of Ambulance Equipment and Supplies - Cooperation - When a physician or a paramedical person is present at scene of the crash, assumes subordinate role and gives full cooperation; in their absence, carries out functions which are the usual responsibilities of police officers, firemen, other ambulance personnel, public utilities personnel, clergymen; cooperates fully with hospital emergency department staffs.

B. Duties as the Driver

1. Personal Attitudes and Conduct - The same standards of professional manner, personal appearance, and conduct as pertains to the attendant are applicable to the driver.

2. Responsibilities to the Injured - Transports the injured in such a manner that it minimizes disturbance to affected part and ensures comfort, prevents shock, allows freedom of breathing, avoids further danger to the injured; knows and abides by laws and traffic regulations pertaining to ambulances.

3. Vehicle Operation - Practices "defensive driving"; exercises emergency privileges properly; prevents crashes; engages in safe driving practices; knows and uses proper operating speeds; knows importance of gentle driving, starting and stopping; knows the relationships of speed to "reaction distance," "braking distance," and "stopping distance;" makes proper use of lights and sirens.

4. Transportation of Mass Casualties - Drives along assigned routes cleared by police; does not alter routes unless

directed by police or central dispatcher; proceeds only to designated areas or hospitals; cooperates in a coordinated, constantly-flowing effort.

5. Maintenance of Vehicle - Understands principles of engine and can make minor repairs; routinely inspects and services mechanical parts; checks safety equipment; cleans debris from vehicle; decontaminates inside after transport with contagious infections or radiation exposure.

XII. EMERGENCY VEHICLES

A. Ambulances

Regardless of the degree of injury or illness for which the ambulance is dispatched, the ambulance and its equipment must be adequate to cope with the most serious emergencies.

B. Helicopters

In helicopters cruising at low altitudes, the medical problems pertaining to transport in a fixed-wing aircraft are not pertinent. At altitudes under 1,000 feet, the indications for oxygen administration are the same and the problems encountered in case of vomiting, sucking wounds of the chest, and injuries to the sinuses, ears, and brain are dealt with in the same manner as during ambulance transportation.

1. Criteria for Use - Accessibility to the injured; speed in transport of attendants to the crash scene, and of the injured to initial emergency care facility, or in transfer to a medical center.

2. Special Problems - Dust requires covering of all open wounds; moving rotor blades dictate pattern in approaching and leaving helicopter; air turbulence requires special attention to securing of litter and the injured; noise interferes with communication and evaluation of vital signs; vibration may make procedures such as intravenous administration or intubation difficult.

C. Rescue Vehicles

The space requirement for personnel and equipment in rescue vehicles designed for medium and heavy

547-291 O - 74 - 11

precludes their use as ambulances. Light rescue equipment should be carried on ambulances as well as on rescue vehicles and ambulance personnel trained in its use.

XIII. THE USE OF EQUIPMENT AND SUPPLIES

Thorough familiarity with the theory of any particular device, indications for its use, the desired effects when it is used, its capabilities and limitations, and its malfunctional problems.

Maintenance, exchange, and periodic inventory.

Efficiency in use, as prescribed in the section on emergency care.

A. Emergency Care

1. Airway Maintenance, Artificial Ventilation, and Oxygenation - Suction apparatus, installed and portable; catheters,* airways, mouth-to-mouth and oropharyngeal,* mouth gags; bag-mask resuscitation unit, installed and portable,* oxygen tanks and masks,* manually triggered oxygen-powered ventilation apparatus.*

2. Control of Hemorrhage - Compression dressings; tourniquets (emphasis on strict limitations in their use).

3. Immobilization of Spine and Extremities - Backboards; half-ring splints; padded boards; inflatable splints; triangular bandages.

4. Dressings - Large universal dressings; pads; bandages; pins; tape; shears.

5. Fluids - Intravenous fluids and administration sets.

6. Emergency Childbirth - Obstetrical kits.

7. Acute Poisoning - Medicinal charcoal; syrup of ipecac.

8. Lighting - Flashlights; floodlights; generators.

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*Appropriate sizes for adults, children, and infants.

B. Safe and Efficient Transport

Warning devices; lights; temperature and humidity controls; restraining devices for litters and occupants; litters; blankets; pillows; neck rolls.

C. Safety Equipment

Warning flags and flares; fire extinguishers; helmets; rubber gloves.

D. Light Rescue Tools

Lifting, prying, cutting and battering tools; backboards; ropes; straps.

E. Communication

Radio equipment.

F. Elective Equipment - For Use by Physicians or Other Persons Trained in its Use

Tracheal intubation kits; mechanical external cardiac compression machine; radiation detection equipment; tracheotomy or cricothyreotomy set; equipment for monitoring of vital signs; cardioscope/defibrillator; pleural drainage set for tension pneumothorax.

XIV. COMMUNICATION

Instruction and demonstration by communication experts on use, regulations, limitations, and maintenance of equipment, and by physicians or paramedical personnel on coordination of care and delivery of the injured. Emphasis on importance of day-to-day use as a prerequisite to efficient operation in disaster.

A. Uses of Communication Equipment

Dispatch and control movement of ambulances; clear traffic lanes; mobilize rescue equipment; dispatch professional personnel and supplies; advise ambulance personnel on care of those injured at scene and during transport; alert emergency departments of expected arrival and condition of the injured;

distribute the injured to appropriate medical facilities; coordinate with local government and civil defense officials and with backup ambulance services.

B. Design of Communication System

1. Radio Communication - Twenty-four hour capability; central dispatching; area to be served; terrain features; flexibility of cross-communication with other systems; system not in parallel with, or isolated from, other networks; compatibility with radio or video transmission of vital signs.

2. Auxiliary Communication - "Walkie-talkie"; telephone messengers.

C. Limitations on Use of Equipment

Federal Communications Commission regulations; stand-by power essential at fixed installations; telephone systems may be blocked.

XV. RELATIONSHIPS WITH HOSPITAL EMERGENCY DEPARTMENTS

Thorough familiarity with care rendered in emergency departments to ensure adequacy of measures taken by ambulance personnel.

A. Problems for Ambulance Personnel

1. Delays in Delivery of Injured - Blocked access; traffic control; inconvenient location of facilities.

2. Delays in Continuation of Care - Unavailability of emergency department personnel; inadequacy of examining or treatment facilities; lengthy history taking; lack of triage.

3. Delays in Return or Exchange of Equipment and Supplies.

B. Rapport

Mutual courtesy and understanding of each other's problems; efficiency of reporting by ambulance personnel; willingness to cooperate and to assist on request.

C. Cooperation

1. By Emergency Department Personnel - Assistance in clearing way and moving victim; avoidance of delay; return or exchange of equipment; replacement of supplies; constructive criticism of inadequate or improper care rendered; credit for use of good judgment and proper care; priority of emergency department attention to life-threatening situations; periodic critiques of quality of emergency care.

2. By Ambulance Personnel - Optimal emergency care and efficient and safe transport in advance of delivery to emergency department; advance notification of arrival; identification of victims whose conditions might warrant high priority of reception and resuscitation; assistance as needed or requested; compliance with hospital regulations; rendering of reports to hospital personnel and to police, if indicated; retrieval of equipment and supplies; prompt departure from emergency department; participation in disaster drills and critiques.

XVI. CONTROL OF THE CRASH SCENE

Immediate attention to life-threatening emergencies supersedes any action to control the scene by ambulance personnel.

A. Needs for Control

To permit access, prompt care, extrication, protection from further hazards; clear lanes for departure.

B. Actions at Scene

Anticipate, en route, possible hazards posed by location and type of emergency.

Prevent further crashes or hazard by: precaution in parking ambulance; removal from situations threatening to lives of the injured and ambulance personnel, such as spilled gasoline or chemicals, escaping gases, downed power lines, spreading fire, flooding water; warning devices to divert traffic.

Restrain bystanders from crowding, mishandling of the injured. Obtain assistance of volunteers and specify tasks.

Manage relatives by allaying hysteria; reassurance; questioning and informing away from presence of the injured; prevent mishandling of the injured.

Avoid assuming functions of police or other authorities when they are present. Do not permit their actions to compromise care of injured.

XVII. RESCUE PROCEDURES APPLICABLE TO AMBULANCE PERSONNEL

In urban areas, when specially equipped rescue vehicles may not be readily available, and in rural areas, where such vehicles are nonexistent, or valuable time might be lost in calling from the scene of the crash for equipment, ambulance personnel must be provided such light rescue equipment as may be carried on the ambulance, and they must be trained in its proper use.

When rescue from entrapment or confinement, or removal from poles, water, or other hazardous environments may be delayed, emergency care for life-threatening conditions must be carried out to the extent that access to the injured permits. Short-distance removal from immediate hazards may be necessary before emergency care can be rendered.

Ambulance personnel should not engage in rescue procedures when qualified rescue persons are present.

A. Short-Distance Removal

Drags; manual carriers; litters, improvised or standard; backboards; chair carry; ladder rescue; rope sling.

B. Extrication Procedures

From vehicles; building debris; electrical lines and equipment; water; vats and tanks; caissons, tunnels, wells, and caves; heights, farm and industrial machinery; locked or blocked living or working areas.

C. Light Rescue Equipment and its Use

Lifting, prying, battering and cutting tools for release from entrapment or for forcible entry; backboards, ropes, straps for removal; portable lighting and firefighting equipment.

XVIII. MEDICOLEGAL PROBLEMS

Ambulance attendants must be thoroughly informed by appropriate local legal authorities of Federal laws, State statutes, and local government ordinances regulating operation of ambulance services and communication systems, and standards for personnel, vehicles, and equipment.

A. Operation of Ambulance Services

1. General - Levels of responsibility as applicable to a local government operation, a commercial enterprise, or a voluntary organization; subsidy; liability coverage.

2. Vehicles - Licensure; safety inspections; use of warning devices; traffic regulation compliance and exemptions; sanitation.

3. Communication - Violations of FCC regulations; coordination with other networks.

B. Personnel Standards

Qualifications for employment; training requirements; certification and licensure; liability insurance; compliance with traffic laws; acts within limits of training and ability; protection under "Good Samaritan" law; abandonment.

C. Vehicles and Equipment

Warning devices; identification symbol; safety specifications; safety devices.

D. Ill or Injured Care Situations

Mentally disturbed or unruly; accompaniment of females; use of restraining devices; requirements for police escort; management of alcoholics; reporting of animal bites and disposition of animal carcass; management of attempted suicide, including search, protection of records and evidence; dying declaration; disposition of dead, including assurance of death, authorization for movement, notification of authorities; reporting of crashes involving felonies.

XIX. RECORDS AND REPORTS

Adequate reporting and record keeping are essential duties of ambulance personnel in transferring responsibility for the ill or injured's care to the personnel in medical facilities, in complying with the requirements of law enforcement and health departments, and in fulfilling administrative needs of the ambulance operator.

A. Purposes Served

Further continuity of care; basis for correction of infractions; source of information for determining quality and adequacy of ambulance services; provides data for analysis of causes, types, and degrees of injuries and illnesses requiring emergency care; provides legal evidence.

B. Procedure

Must not take priority over victim care. Interrogate victim, relatives or bystanders; note pertinent statements of those not available later for full interrogation; collect suicide notes or related papers for legal authorities; note voluntary dying statement; search for emergency medical identification devices; safeguard weapons which may be or may have been involved in suicide or homicide.

C. Information Desired

1. Medical Facilities - Identification of ill or injured, type of crash or nature of illness; location of person when first seen; rescue measures preceding emergency care; care given at site and during transport; crashes and mishaps during transport; disposition of valuables.

2. Law - Information gained in absence of, or ancillary to needs of, officials: circumstances in suicide, homicide, or rape; animal bites; dying statements; statements that may serve as testimony.

3. Health - Requirements of coroner or medical examiner in case of death at scene or during transport; animal bites; radiation, chemical, or gas hazards.

4. Ambulance Operator - Administrative records required by ambulance owner, including time intervals of crash, dispatch, arrival at scene, departure, and delivery to emergency department.

SECTION THREE - IN-HOSPITAL TRAINING PROGRAM

In-hospital training consists of observation, demonstration, and participation to the extent permitted by the professional staff. Instruction is designated (1) to demonstrate the importance and benefits of optimal emergency care, efficient transport, and adequate reporting; (2) to emphasize the penalties of inadequate care or improper procedures; (3) to familiarize the student with the equipment used, staffing, operating policies, and procedures of the department; (4) to have ambulance personnel observe procedures in and develop skills in resuscitation, handling the unconscious, management of the mentally disturbed and unruly, and techniques of delivery and care of both the infant and the mother; (5) to keep ambulance personnel abreast of new developments in equipment and emergency care; and (6) to have ambulance personnel engage in disaster drills.

Two consecutive hours of training are required at any one period in order to receive credit toward completion of a course in the assigned department.

Responsibility for conduct of this program should be assigned to the staff of the emergency department. Training areas include the emergency department, operating and recovery rooms, the intensive care unit, the obstetrical department, and the psychiatric department.

GUIDELINES FOR ADVANCED TRAINING OF AMBULANCE PERSONNEL

(480 hours)

RECOMMENDED COURSE CONTENT

The advanced emergency medical technician—ambulance (EMT-A) candidate already has the educational foundation provided by basic EMT—A training. Much of his additional training will be repetition of basic anatomy, physiology, pharmacology, and bacteriology covered during the basic course, but with emphasis now directed to pathophysiologic changes and their correction, rather than symptom treatment. Practice in basic emergency care must be carried out until response is not only correct but instinctive.

Training is through classroom demonstration, laboratory experience, and actual patient care in the various areas of the hospital. Emphasis is on the anatomic and pathophysiologic basis of a disease process, reasons for the type of treatment rendered, how this treatment alters the disease process, and autopsy findings in instances where the patient does not survive.

In addition to the procedures that the student is authorized or directed by a physician to perform, he will observe and become familiar with many procedures now performed only by physicians. Life-saving procedures must be thoroughly learned by all students, whether or not local regulations would currently allow them to carry out such acts independently; men trained in one jurisdiction may well function in jurisdictions where laws regulating their activity are not so limiting. As more emergency medical technicians-ambulance are trained, as their capabilities are recognized, and as good ambulance-to-hospital communication develops, greater use of their skills under the direction of the physician will evolve.

The curriculum should include in-depth study of such caliber and extent as to qualify the emergency medical technician to carry out procedures now applied by allied health assistants under physician supervision in hospitals and by military medical corpsmen in combat areas.

Subjects of the curriculum are as follows:

I. ANIMAL LABORATORY EXPERIENCE

  A. Signs, symptoms, correction of:

    1. Airway obstruction, asphyxia, hypoventilation, hypoxia

    2. Ventricular fibrillation, premature ventricular contractions, ventricular standstill

    3. Pneumothorax

      a. Tension

      b. Open

      c. Simple (hazard of converting to tension pneumothorax by administering positive pressure ventilation)

    4. Hemothorax
    5. Cardiac tamponade

  B. Expertise in:

    1. Endotracheal intubation
    2. Endotracheal suction
    3. Assisted and controlled ventilation
    4. Venipuncture

II. CLASSROOM AND LABORATORY

  A. Anatomy—didactic, anatomy laboratory, morgue

  B. Advanced physiology

    1. Normal
    3. Abnormal

      a. Hypoxia, asphyxia, hypoventilation, complications of oxygen inhalation, decompensated chronic obstructive lung disease
      b. Hypovelemia
      c. Shock
      d. Cranial injuries
      e. Drug overdose
      f. Burns
      g. Coronary occlusion or insufficiency
      h. Stroke
      i. Diabetes

        j. Drowning

        k. Electrocution

        l. Masked organ damage

C. Bacteriology—principles of infection, asepsis, decontamination

D. Pharmacology

    1. Acid/base concepts

    2. Common resuscitative drugs, vasoactive agents, antiarrhythmics, alkalizing agents, balanced electrolyte solutions, blood volume expanders

    3. Actions of and reactions to common drugs

    4. Contraindications for some drugs

E. Fluid volume—relationship to blood pressure, pulse rate, urine output

F. Use and interpretation of cardiac monitor—lead placement, use of lead pad, common artifacts

G. Defibrillation—associated equipment dangers

H. Hypodermic injections—as different from intravenous

I. Intravenous injections—syringe, tubing, needle sizes, dynamics of flow, site selection, volume indications and restrictions

J. Pacemakers

K. Sterile techniques

L. Isolation techniques

M. Use and maintenance of approved mechanical equipment

N. Common problems and pitfalls associated with the use of equipment (understanding of tank color coding, pin indexing, reducing yoke installation)

O. Unacceptable equipment and why—respirators, airways, etc.

P. Personnel management

Q. Logistics management

R. Concepts of coordinated disaster response

S. Protection—from noxious liquids and gases, radiation, mechanical and electric hazards

T. Communication techniques—radio, telephone, verbal and written reports, telemetry of physiologic data

U. Teaching techniques and methods—lecture, audiovisual, examinations

V. Principles of extrication and patient handling

III. HOSPITAL DEPARTMENTS—EXPERIENCE TO BE GAINED IN:

A. Anesthesiology

1. Vital and diagnostic signs—recognition and significance
2. Airway control techniques in apneic and breathing patients, tracheal intubation, suctioning
3. Positive pressure ventilation devices—manual and mechanical
4. Injections—intravenous, intramuscular, subcutaneous
5. Intravenous fluids
6. Electrocardiogram and electroencephalogram patterns
7. Loss of protective reflexes
8. Management of unconscious patient

B. Recovery room

1. Management of unconscious patient
2. Respiratory care, including airway control, oxygenation, ventilation, airway humidification techniques
3. Vital and diagnostic signs
4. Central venous pressure monitoring concepts
5. Drainage systems—gastric, bladder, pleural
6. Nursing skills, such as transfer of patients with dressings and drains

C. Intensive care and coronary care

1. Monitors—cardioscope, others
2. Defibrillation
3. Pacemakers
4. Intravenous fluids and medications
5. Long-term ventilation problems, intermittent positive pressure breathing (IPPB), care and maintenance of equipment
6. Vital and diagnostic signs
7. Use of drugs
8. Electrocardiogram—basic patterns
9. Cardiopulmonary resuscitation
10. Equipment hazards
11. Electroencephalograph—brain death, possible organ donor
12. Fluid intake, output

D. Surgery

   1. Sterile techniques

   2. Anatomy and physiology

   3. Wound care

   4. Dressings

E. Orthopedics

   1. Immobilization techniques

   2. Wound care

F. Neurosurgery

   1. Unconsciousness

   2. Paralysis

   3. Wound care

G. Obstetrics, nursery and pediatrics

   1. Delivery and postdelivery care

      a. Placenta

      b. Hemorrhage

      c. Perineal damage

      d. Monitoring of fetal heart tones

   2. Care of newborn

      a. Handling of the infant—head support, etc.

      b. Airway ventilation and oxygenation problems

      c. Umbilical cord

        - d. Temperature control
        - e. Cardiopulmonary resuscitation
    - H. Emergency department
        - 1. Application of principles of emergency care
        - 2. Critique for evaluation of good and poor emergency care at the scene with follow-up in hospital

IV. MORGUE—OBSERVATION OF AUTOPSIES FOR:

- A. Basic topographic anatomy
- B. Conditioning to open wounds, trauma
- C. Anatomic basis of endotracheal intubation
- D. Cause of death from trauma
- E. Complications of cardiac compression
- F. Fractures and associated injuries—emphasis on nerve and vessel damage

V. PRACTICE IN SIMULATED AND REAL EMERGENCIES

- A. Extrication—light, heavy
- B. Triage (sorting)
- C. Disaster exercises
- D. Group Management
- E. Stop-action demonstrations
- F. Ambulance design adaptation and future needs
- G. Ambulance maintenance—repair of equipment, use of common tools
- H. Transport over difficult terrain

I. Helicopter transportation

J. Water transportation

K. Review of patient care situations

L. Driving review—emergency driving, defensive driving

547-291 O - 74 - 12

APPENDIX I

A MODEL ORDINANCE OR STATUTE REGULATING AMBULANCE SERVICE*

I. INTRODUCTION

A. Development of this model ordinance or statute began in 1956 when representatives of the medical profession concluded that the medical profession had taken too little interest in preventing trauma, while those responsible for traffic safety were too little concerned with the human salvage operations of the doctors. This resulted in a Joint Action Program sponsored by three organizations, the American College of Surgeons, the American Association for the Surgery of Trauma, and the National Safety Council.

B. Late in 1959 the policy committee of this group asked the Traffic Conference to develop a model ordinance or statute relating to the transportation of the injured. A special Conference committee was activated representing the several interests involved, including a legal consultant to undertake the task.

C. The pages that follow represent an ordinance or statute developed after a number of meetings of the committee, and extensive correspondence with many interested groups. Numerous city ordinances and the National Institute of Municipal Law Officers model were used as a guide. At the October 28, 1962, meeting of the special committee of the Conference, representatives of ambulance associations throughout the country inattendance offered several excellent suggestions which were incorporated. The model was approved by the Traffic Conference on October 27, 1963. Section 8 A and 10 B. 4 were amended February 1970, to require ambulance equipment for handling several kinds of emergencies, other than dressing wounds and hemorrhages and additional training for ambulance attendants.

D. At this meeting it was concluded that such a regulation would be more effective if it became a state law. Therefore, the draft is designed so that with appropriate changes, it may be used also as a Model Statute. Where feasible, it was concluded, a state statute is preferable to a local ordinance.

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*1972.

E. On page I-5, Section 2 Licensing Requirements, it is presumed that where the model is used as an ordinance the city or county has legal authority under state law to adopt special license requirements for ambulances. The legal assumption, which should be verified in each case, is that the city or county has authority under its police power to prescribe regulations necessary to supplement state laws where the public safety and welfare so require. Therefore, it should be expressly understood that, in any state, the model, when adopted as an ordinance, must be modified to eliminate any conflict with existing state laws.

F. The intent of the model is to serve as a guide to improve a necessary public service and provide uniformity throughout the United States.

A MODEL ORDINANCE* REGULATING AMBULANCE SERVICE

TABLE OF CONTENTS

Section		Page
1	Definitions	I-4
2	License Required	I-5
3	Application for Ambulance License	I-6
4	Standards for Ambulance License	I-7
5	Standards for Ambulance License - Liability Insurance	I-8
6	Duties of License Officer	I-9
7	Duties of Health Officer	I-10
8	Standards for Ambulance Equipment	I-10
9	Applications for Drivers, Attendants and Attendant-Drivers License	I-11
10	Standards for Drivers, Attendants and Attendant-Drivers License	I-12
11	Renewal of License	I-13
12	Revocation of License	I-13
13	Reports	I-14
14	Obedience to Traffic Laws, Ordinances and Regulations	I-14
15	Penalties	I-15
16	Separability	I-16
17	Effective Date	I-16
18	Ordinances Repealed	I-16

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*This model is designed so that, with appropriate changes, it may be used also as a Model Statute. Where feasible, a State statute is preferable to a local ordinance. It has been adapted as a Model State Statute by the Council of State Governments.

A MODEL ORDINANCE REGULATING AMBULANCE SERVICE

An Ordinance to Regulate the Licensing, Inspection and Operation of Ambulances, to Provide Standards for the Licensing of Ambulances and of Ambulance Drivers, Attendants, and Attendant-Drivers, to Provide for Renewal and Revocation of Licenses, to Require Written Reports, to Provide for Traffic Regulations of Ambulances, and to Establish Penalties for Violation of its Provisions.

The (enacting body________) of (city or county__________)
ordains as follows:

II. SECTION 1. DEFINITIONS

Unless otherwise specified, the term

A. "Ambulance" means any privately- or publicly-owned motor vehicle or aircraft* that is specially designed or constructed, and equipped, and is intended to be used for and is maintained or operated for the transportation of patients, including dual purpose police patrol cars and funeral coaches or hearses which otherwise comply with the provisions of this Ordinance, except any such motor vehicle or aircraft* owned by, or operated under the direct control of, the United States.

B. "Attendant" means a trained and/or qualified individual responsible for the operation of an ambulance and the care of the patients whether or not the attendant also serves as driver.

C. "Attendant-Driver" means a person who is qualified as an attendant and a driver.

D. "Driver" means an individual who drives or pilots an ambulance.

E. "Dual purpose police patrol car" means a vehicle, operated by a police department, which is equipped as an ambulance, even though it is also used for patrol or other police purposes.

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*This includes helicopter or fixed wing aircraft.

F. "Health Officer" means the (city or county________________) Health Officer or other designated official.

G. "License Officer"* means the (city or county________________) (designated officer ________________).

H. "Patient" means an individual who is sick, injured, wounded, or otherwise incapacitated or helpless.

I. "Person" means any individual, firm, partnership, association, corporation, company, group of individuals acting together for a common purpose or organization of any kind, including any governmental agency other than the United States.

III. SECTION 2. LICENSE REQUIRED*

A. No person, either as owner, agent or otherwise, shall furnish, operate, conduct, maintain, advertise, or otherwise be engaged in or profess to be engaged in the business or service of the transportation of patients upon the streets, alleys, or any public way or place of (city or county________ ____________) unless he holds a currently valid license for an ambulance, issued pursuant to this Ordinance. An ambulance operated by an agency of the United States shall not be required to be licensed hereunder.

B. No ambulance shall be operated for ambulance purposes, and no individual shall drive, attend or permit it to be operated for such purposes on the streets, alleys, or any public way or place of (city or county________________) unless it shall be under the immediate supervision and direction of a person who is holding a currently valid license as an attendant-driver or attendant.

C. Provided however, that no such licenses shall be required for an ambulance or for the driver, attendant or attendant-driver of an ambulance,

1. which is rendering assistance to licensed ambulances in the case of a major catastrophe or emergency with which

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*Where there is a Health Officer, he should be designated as the License Officer.

the licensed ambulances of (city or county ____________) are insufficient or unable to cope; or is

2. operated from a location or headquarters outside of (city or county ____________) in order to transport patients who are picked up beyond the limits of (city or county ____________) to locations within (city or county ____________), but no such outside ambulance shall be used to pick up patients within (city or county ____________) for transportation to locations within (city or county ____________) unless the driver, attendant and attendant-driver and the person subject to the provisions of Section 2 A of this Ordinance in respect of such ambulance, hold currently valid licenses issued pursuant to this Ordinance.

IV. SECTION 3. APPLICATION FOR AMBULANCE LICENSE

Applications for ambulance licenses hereunder shall be made upon such forms as may be prepared or prescribed by the License Officer and shall contain:

A. The name and address of the applicant and of the owner of the ambulance.

B. The trade or other fictitious name, if any, under which the applicant does business and proposes to do business.

C. The training and experience of the applicant in the transportation and care of patients.

D. A description of each ambulance, including the make, model, year of manufacture, motor and chassis number; current state or Federal Aviation Agency license numbers; the length of time the ambulance has been in use; and the color scheme, insignia, name, monogram or other distinguishing characteristics to be used to designate applicant's ambulance.

E. The location and description of the place or places from which it is intended to operate.

F. Such other information as the License Officer shall deem reasonably necessary to a fair determination of compliance with this Ordinance.

G. An accompanying license fee of $ _____ .

V. SECTION 4. STANDARDS FOR AMBULANCE LICENSE

A. Each ambulance shall, at all times when in use as such,

1. be suitable for the transportation of patients from the standpoint of health, sanitation and safety, and be maintained in suitable premises;
2. contain equipment conforming with the standards, requirements and regulations provided for herein, which equipment shall be in proper and good condition for such use;
3. currently comply with all applicable laws and local ordinances relating to health, sanitation and safety;
4. be equipped with such lights, sirens and special markings to designate it as an ambulance as may be prescribed in reasonable regulations promulgated by the License Officer; and
5. be equipped with approved safety belts for the driver, and for a passenger in the front seat if such seat is provided.

B. Any change of ownership of a licensed ambulance shall terminate the license and shall require a new application and a new license and conformance with all the requirements of this Ordinance as upon original licensing.

C. Application for transfer of any ambulance license to another or substitute vehicle shall require conformance with all the requirements of this Ordinance as upon original licensing. No ambulance license may be sold, assigned, mortgaged or otherwise transferred without the approval of the License Officer and a finding of conformance with all the requirements of this Ordinance as upon original licensing.

D. Each licensed ambulance, its equipment and the premises designated in the application and all records relating to its maintenance and operation as such, shall be open to inspection by the Health Officer or his designated representatives during usual hours of operation.

E. No official entry made upon a license may be defaced, removed or obliterated.

VI. SECTION 5. STANDARDS FOR AMBULANCE LICENSE—LIABILITY INSURANCE

A. No ambulance license shall be issued under this Ordinance, nor shall such license be valid after issuance, nor shall any ambulance be operated in (city or county __________________) unless there is at all times in force and effect insurance coverage, issued by an insurance company licensed to do business in the State of (______________), for each and every ambulance owned and/or operated by or for the applicant or licensee, providing for the payment of damages;

1. for injury to or death of individuals in accidents resulting from any cause for which the owner of said vehicle would be liable on account of liability imposed on him by law, regardless of whether the ambulance was being driven by the owner or his agent, and
2. for the loss of or damage to the property of another, including personnal property, under like circumstances,

in such sums and under such terms as may be required in regulations promulgated by the License Officer.

B. Said insurance policies shall be submitted to the License Officer for approval prior to the issuance of each ambulance license. Satisfactory evidence that such insurance is at all times in force and effect shall be furnished to the License Officer, in such form as he may specify, by all licensees required to provide such insurance under the provisions of this Ordinance.

C. Every insurance policy required hereunder shall contain a provision for a continuing liability thereunder to the full amount thereof, notwithstanding any recovery thereon, that the liability of the insurer shall not be affected by the insolvency or the bankruptcy of the assured, and that until the policy is revoked the insurance company will not be relieved from liability on account of non-payment of premium, failure to renew license at the end of the year, or any act or omission of the named assured. Such policy of insurance shall be further conditioned for the payment of any judgments up to the limits of said policy, recovered against any person other than the owner, his agent or employee, who may operate the same with the consent or acquiescence of the owner.

D. Every insurance policy required hereunder shall extend for the period to be covered by the license applied for and the insurer shall be obliged to give not less than ______ days written notice to the License Officer and to the assured before any cancellation or termination thereof earlier than its expiration date and the cancellation or other termination of any such policy shall automatically revoke and terminate the licenses issued for the ambulances covered by such policy, unless another insurance policy complying with the provisions of this section shall be provided and be in effect at the time of such cancellation or termination.

VII. SECTION 6. DUTIES OF LICENSE OFFICER

A. The License Officer shall, within ______ days after receipt of an application for an ambulance license as provided for herein, cause such investigation as he deems necessary to be made of the applicant and of his proposed operations.

B. The License Officer shall issue a license hereunder for a specified ambulance, to be valid for a period of ______ years unless earlier suspended, revoked or terminated, when he finds:

1. That the public convenience and necessity require the proposed ambulance service.
2. That each such ambulance, its required equipment and the premises designated in the application, have been certified by the Health Officer as provided for herein.
3. That the applicant is a responsible and proper person to conduct or work in the proposed business.
4. That only duly licensed drivers, attendants and attendant-drivers are employed in such capacities.
5. That all the requirements of this Ordinance and all other applicable laws and ordinances have been met.

VIII. SECTION 7. DUTIES OF HEALTH OFFICER

A. Prior to the issuance of any ambulance license hereunder, the Health Officer shall cause to be inspected the vehicles, equipment and premises designated in each application hereunder, and shall certify his approval in a written report to the License Officer when he finds compliance with the standards prescribed in Section 4 A and in Section 8 of this Ordinance, and with the regulations promulgated under such sections;

Provided, however, that under the terms of this Ordinance the Health Officer shall have no responsibility, and shall exercise no authority, in connection with laws and ordinances of general applicability which deal with motor vehicle inspection.

B. Subsequent to issuance of an ambulance license hereunder, the Health Officer shall cause to be inspected each such licensed vehicle, and its equipment and premises, whenever he deems such inspection to be necessary but in any event no less frequently than twice each year, and shall promptly report his findings in a written report to the License Officer. The periodic inspection required hereunder shall be in addition to any other safety or motor vehicle* inspection required to be made for ambulances or other motor vehicles,* or other inspections required to be made, under general law or ordinances, and shall not excuse compliance with any requirement of law or ordinance to display any official certificate of motor vehicle inspection and approval nor excuse compliance with the requirements of any other applicable general law or ordinance.

C. A copy of each initial, semi-annual or other ambulance, equipment and premises inspection report submitted by the Health Officer to the License Officer under the provisions of this section shall be promptly transmitted to the applicant or licensee to whom it refers.

IX. SECTION 8. STANDARDS FOR AMBULANCE EQUIPMENT

A. Required equipment in each ambulance shall include, at all times when the ambulance is in use as such, equipment adequate in the judgment of the Health Officer for light rescue, protected extrication, dressing wounds, splinting fractures, controlling hemorrhage, providing oxygen, assisting respiration, monitoring blood pressure, pulse and respiration rates, assisting in emergency childbirth and management of mentally deranged.

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*This includes aircraft.

B. The Health Officer is authorized and directed to promulgate regulations, after public notice and opportunity for public hearing, to implement the standards provided herein as to required equipment in ambulances. In determining the adequacy of equipment, the Health Officer shall take into consideration the current list of essential equipment for ambulances, adopted by the American College of Surgeons or its duly authorized Committee on Trauma. Each licensee of an ambulance shall comply with such reasonable regulations hereunder as may be promulgated by the Health Officer and shall maintain in each such ambulance, at all times when it is in use as such, all such equipment as may be prescribed by the Health Officer hereunder.

X. SECTION 9. APPLICATIONS FOR DRIVERS, ATTENDANTS AND ATTENDANT-DRIVERS LICENSE

Applications for drivers, attendants and attendant-drivers licenses hereunder shall be made upon such forms as may be prepared or prescribed by the License Officer and shall contain:

A. The applicant's full name, current residence, places of residence for _____ years previous to moving to his present address, and length of time he has resided in (city or county _________________).

B. The applicant's age, marital status, height, color of eyes and hair.

C. Whether he has ever been convicted of a felony or misdemeanor, and if so, when and where and for what cause.

D. The applicant's training and experience in the transportation and care of patients, and whether he has previously been licensed as a driver, chauffeur, attendant or attendant-driver, and if so, when and where, and whether his license has ever been revoked or suspended in any jurisdiction and for what cause.

E. Affidavits of good character from two reputable citizens of the United States and residents of (city or county__________ ______) who have personally known such applicant and observed his conduct during_______years next preceding the date of his application.

F. Two recent photographs of the applicant, of a size designated by the License Officer, one of which shall be attached by the License Officer to the license.

G. Such other information as the License Officer shall deem reasonably necessary to a fair determination of compliance with this Ordinance.

H. An accompanying license fee of $ __________.

XI. SECTION 10. STANDARDS FOR DRIVERS, ATTENDANTS AND ATTENDANT-DRIVERS LICENSE

A. The license Officer shall, within a reasonable time after receipt of an application as provided for herein, cause such investigation as he deems necessary to be made of the applicant for a drivers, attendants or attendant-drivers license.

B. The License Officer shall issue a license to a driver, attendant or attendant-driver hereunder, valid for a period of years, unless earlier suspended, revoked or terminated, when he finds that the applicant

1. is not addicted to the use of intoxicating liquors or narcotics, and is morally fit for the position;

2. is able to speak, read and write the English language;

3. has been found by a duly licensed physician, upon examination attested to on a form provided by the Health Officer, to be of sound physique, possessing eyesight in one eye of 20/20 vision, and the other or worse eye can be corrected to at least 20/40 vision, and free of physical defects or diseases which might impair the ability to drive or attend an ambulance; and

4. for each applicant for attendant or attendant-drivers license, that such applicant has a currently valid certificate

evidencing successful completion of the DOT 81 hour course or approved equivalent.

Provided however, that no one shall be licensed as a driver or attendant-driver unless he holds a currently valid chauffeur's permit from the State of (____________________), or FAA Commercial License for aircraft pilots.

C. A license as driver, attendant or attendant-driver issued hereunder shall not be assignable or transferable.

D. No official entry made upon a license may be defaced, removed, or obliterated.

XII. SECTION 11. RENEWAL OF LICENSE

Renewal of any license hereunder, upon expiry for any reason or after revocation, shall require conformance with all the requirements of this Ordinance as upon original licensing.

XIII. SECTION 12. REVOCATION OF LICENSE

A. The License Officer may, and is hereby authorized to, suspend or revoke a license issued hereunder for failure of a licensee to comply and to maintain compliance with, or for his violation of, any applicable provisions, standards or requirements of this Ordinance, or of regulations promulgated hereunder, or of any other applicable laws or ordinances or regulations promulgated thereunder, but only after warning and such reasonable time for compliance as may be set by the License Officer. Within ______ days after a suspension, the licensee shall be afforded a hearing, after reasonable notice. The License Officer shall, within ______ days after conclusion of such hearing, issue a written decision (which shall include written findings) as to the suspension of said license. Such written decision shall be promptly transmitted to the licensee to whom it refers.

B. The initial, semi-annual or other ambulance, equipment and premise inspection reports of the Health Officer herein provided for shall be prima facie evidence of compliance or non-compliance with, or violation of, the provisions, standards and requirements provided herein, and of the regulations promulgated hereunder, for the licensing of ambulances.

C. Upon suspension, revocation or termination of an ambulance license hereunder, such ambulance shall cease operations as such and no person shall permit such ambulance to continue operations as such. Upon suspension, revocation or termination of a drivers, attendants or attendant-drivers license hereunder, such driver, attendant or attendant-driver shall cease to drive or attend an ambulance and no person shall employ or permit such individual to drive or attend an ambulance.

XIV. SECTION 13. REPORTS

A. Within hours after transporting any patient within (city or county ____________), or from one place within (city or county ____________) to another place within or beyond its limits, the licensee of an ambulance hereunder shall file a written report with such (designated official ____________ ____________) of (city or county ____________________) upon such forms as they may provide or prescribe, giving all information therein required and any other relevant information which such (designated official ____________________) may require.

B. The provisions of subsection A of this section shall apply with equal force in case such patient shall die before being so transported in such ambulance or dies while being transported therein or at any time prior to the acceptance of the patient into the responsibility of the hospital or medical or other authority if the patient is still under the care or responsibility of the ambulance.

XV. SECTION 14. OBEDIENCE TO TRAFFIC LAWS, ORDINANCES AND REGULATIONS

A. The driver of an ambulance, when responding to an emergency call or while transporting a patient, may exercise the privileges set forth in this section, but subject to the conditions herein stated, and only when such driver has reasonalbe grounds to believe that an emergency in fact exists requiring the exercise of such privileges.

B. Subject to the provisions of Subsection A hereof, the driver of an ambulance may

1. Park or stand, irrespective of the otherwise applicable provisions of law, ordinance or regulation;

2. Proceed past a red or stop signal or stop sign, but only after slowing down as may be necessary for safe operation;

3. Exceed the maximum speed limits permitted by law, ordinance or regulation so long as he does not endanger life or property; and

4. Disregard laws, ordinances or regulations governing direction or movement or turning in specified directions.

C. The exemptions herein granted shall apply only when such ambulance is making use of audible and visual signals meeting the requirements of law, ordinance or regulation.

D. The foregoing provisions shall not relieve the driver of an ambulance from the duty to drive with due regard for the safety of all persons, nor shall such provisions protect the driver from the consequences of his reckless disregard for the safety of others.

XVI. SECTION 15. PENALTIES

A. Any person violating, or failing to comply with, the provisions of Section 2 A of this Ordinance and the applicable provisions hereof relating to the licensing of ambulances, shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined an amount not exceeding $ ________ or imprisoned for a period not exceeding ______ days, or be both so fined and imprisoned, for each offense.

B. Any person violating, or failing to comply with, any other provision of this Ordinance shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined an amount not exceeding $ _____ or be imprisoned for a period not exceeding ______ days, or be both so fined and imprisoned, for each offense.

C. Each day that any violation of, or failure to comply with, this Ordinance is committed or permitted to continue shall constitute a separate and distinct offense under this section and shall be punishable as such hereunder; provided, however, that the Court may, in appropriate cases, stay the cumulation of penalties.

XVII. SECTION 16. SEPARABILITY

If any section, subsection, sentence, clause, phrase or portion of this Ordinance is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed a separate, distinct and independent provision and such holding shall not affect the validity of the remaining portions hereof.

XVIII. SECTION 17. EFFECTIVE DATE

This Ordinance shall become effective on (date ______________________ ____________________)

XIX. SECTION 18. ORDINANCES REPEALED

All ordinances and parts of ordinances in conflict with the provisions of this Ordinance are hereby repealed as follows:

____

____

____

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Adopted this __________ day of ________________________, 19___.

APPENDIX J

DESCRIPTION OF SELECTED EMERGENCY MEDICAL SERVICES SYSTEMS

I. INTRODUCTION

A 1968 National Highway Safety Bureau contract effort was directed at the study of 18 types of EMS systems. These were selected on the basis of successful operation and, where possible, in areas where former unsatisfactory service required a shift to the existing system. Publication of this study facilitates comparison with conditions in an area of need to facilitate selection of the best suited system without costly trial and error.

II. SYSTEMS STUDIED

A. Systems studied include:

1. A police department of county seat handling calls in a county of a midwestern industrial area; population served, 56,000; area covered, 408 square miles.

2. Police department operation in an industrial city in the southeastern U.S.; population served, 384,000; area covered, 63 square miles.

3. Helicopter ambulance service provided by the fire department in a large city located on the Great Lakes; population served, over 3 million; area covered, 225 square miles.

4. Fire department operation in a rural county in the northwestern U.S.; population served, 40,800; area covered, 714 square miles.

5. Fire department operation by a medium-sized northwestern city; population served, 225,000; area covered, 110 square miles.

6. Fire department operation by an eastern city; population served, 1,000,000; area covered, 75 square miles.

7. Volunteer rescue squad associated with volunteer fire department in midwestern rural area township 25 miles from a city of substantial size; population served, 5,600; area covered, 50 square miles.

8. Volunteer rescue squad associated with volunteer fire department in rural southern community; population served, 25,000; area covered, 93 square miles.

9. Incorporated volunteer rescue squads of 3 communities (rural, resort, and industrial) in a North Atlantic State; population served, 30,000; area covered, 15 square miles.

10. Community hospital ambulance service in urban/rural area in the northwestern U.S.; population served, 50,000; area covered, 40 square miles.

11. Public and private hospital ambulance services in a midwestern urban county; private companies bid to handle the overflow of the public hospital calls; population served, 943,000; area covered, 562 square miles.

12. Mortician contracting with a city to complete calls answered by the rescue squad of the city fire department; population served 77,500; area covered, 9 square miles.

13. Private ambulance service in a heavily populated southern county; population served, 1,200,000; area covered, 2,042 square miles.

14. Two private ambulance companies under contract to a large northwestern city; population served, 580,000; area covered, 82 square miles.

15. Private ambulance company contracting with 2 cities in an industrialized mid-Atlantic area; population served, 120,000; area covered, 35 square miles.

16. Private ambulance company contracting with midwestern county having both urban and rural population densities; several mortician operations in heavily populated areas; population served, 211,000; area covered, 716 square miles.

17. Multiple private ambulance companies dispatched by a government agency in a western county; population served, 1,000,000; area covered, 1,300 square miles.

18. Volunteer rescue squad dispatched by a fire department in an urbanized Central Atlantic county adjoining a large urban center; population served, 80,000; area covered, 16 square miles.

B. The study report may be obtained for the price of $3.00 per volume from the Clearinghouse for Federal Scientific and Technical Information, 5285 Port Royal Road, Springfield, Virginia 22151. Requests should cite Documents Nos. PB 179-651 (Vol. 1) and PB 179-652 (Vol. 2).

APPENDIX K

JOB DESCRIPTION EMERGENCY MEDICAL TECHNICIAN-AMBULANCE

AND

SAMPLE INVITATION FOR APPLICATIONS FOR THE POSITION OF EMERGENCY MEDICAL TECHNICIAN-AMBULANCE

I. WORK REQUIREMENTS

A. Responds to emergency calls to provide efficient and immediate care to the critically ill and injured, and transports the patient to a medical facility.

B. After receiving the call from the dispatcher, drives ambulance to address or location given, using the most expeditious route, depending on traffic and weather conditions. Observes traffic ordinances and regulations concerning emergency vehicle operation.

C. Upon arrival at the scene of accident or illness, parks the ambulance in a safe location to avoid an accident. In the absence of police, enlists the assistance of persons available to create a safe traffic environment, such as the placement of road flares, removal of debris, and rediction of traffic for the protection of the injured and those assisting in the care of the injured.

D. Determines the nature and extent of illness or injury and establishes priority for required emergency care. Renders emergency care, such as opening and maintaining an airway, giving positive pressure ventilation, cardiac resuscitation, controlling of hermorrhage, treatment of shock, immobilization of fractures, bandaging, assisting in childbirth, management of mentally disturbed patients, and initial care of poison and burn patients. Administers drugs, including intravenous fluids, as directed by a physician.

E. Reassures patients and bystanders by working in a confident, efficient manner. Avoids mishandling and undue haste while working expeditiously. Searches for medical identification emblem as a clue in providing emergency care.

F. Where patients must be extricated from entrapment, assesses the extent of injury and gives all possible emergency care and protection to the entrapped patient and uses the prescribed techniques and appliances for removing the patient safely. Radios the dispatcher for additional help or special rescue and/or utility services, if needed. Provides light rescue service if the ambulance has not been accompanied by a specialized unit. After extrication, provides additional care in sorting of the injured in accordance with standard emergency procedures.

G. Complies with regulations on the handling of the deceased, notifies authorities, and arranges for protection of property and evidence at scene.

H. Assists in lifting stretcher, placing in ambulance and seeing that patient and stretcher are secured and that emergency care, if necessary, is continued.

I. From the knowledge of the condition of the patient and the extent of injuries and the relative locations and staffing of emergency hospital facilities, determines the most appropriate facility to which the patient will be transported, unless otherwise directed by the dispatcher or a physician. Reports directly to the emergency department or control center the nature and extent of injuries, the number being transported, and the destination to assure prompt medical care on delivery. For serious cases, may ask for additional advice from the hospital physician or emergency department.

J. Constantly observes patient enroute to emergency facility, administers additional care as indicated or directed by physician.

K. Identifies diagnostic signs which may require radio communications with a medical facility for advice and for notification that special professional services and assistance be immediately available upon arrival at the medical facility.

L. Assists in lifting and carrying the patient out of the ambulance and into the emergency department.

M. Reports verbally and in writing his observation and care of patient at the emergency scene and in transit, to the emergency department staff for record and diagnostic purposes. Upon request, provides assistance to the emergency department staff.

N. After each trip, replaces used linens, blankets and other supplies, sends supplies for sterilization, makes careful check of all equipment so that the ambulance is ready for the next run. Maintains ambulance in efficient operating condition. Ensures that the ambulance is clean and washed and kept neat and in an orderly condition. In accordance with local or state regulations, decontaminates the interior of the vehicle after transport of victim with contagious infection or radiation exposure. Determines that vehicle is in proper operating condition by checking gas, oil, water in battery and radiator, and tire pressure. Maintains familiarity with specialized equipment items used by the ambulance service.

NOTE: Seniority and responsibility should be determined by the one responsible for employment and surveillance of personnel. Attendants and drivers should be equally trained in each other's duties and responsibilities so that they may function interchangeably or independently in caring for multiple casualties.

II. EDUCATION, TRAINING AND EXPERIENCE

A. A high school education or equivalency qualification is considered minimal. Must be 18 years of age or older.

B. Minimum training shall be that prescribed in the basic training program for emergency medical technicians-ambulance of the Department of Transportation and the Public Health Service, or equivalency.

C. Has practical experience in the care and use of emergency equipment commonly accepted and employed, such as suction machines, oxygen delivery systems (installed and portable), backboards, fracture kits, emergency medical care kits, obstetrical kits, intravenous kits, stretchers of various types, light rescue tools, and basic automobile mechanics. Has a basic understanding of sanitizing and disinfecting procedures. Has knowledge of safety and security measures.

D. Acquires, through critiques and conferences with emergency department personnel, constructive criticism of care rendered and instruction in advances in patient care and in new or improved equipment.

E. Acquires a thorough knowledge of the territory within his service area, and the traffic ordinances and laws concerning the emergency care and transportation of the sick and injured. Has necessary driver and professional licenses as required by law.

III. SPECIAL CHARACTERISTICS

A. Aptitudes

1. Motor coordination in administering emergency care of the critically ill and injured, in lifting and carrying patients, and in driving the ambulance.

2. Manual dexterity and physical coordination in carrying, lifting, extricating, climbing, hoisting, and other similar maneuvers in a manner not detrimental to the patient, fellow workers, or self.

3. Facility to give and receive verbal and written directions and instruction.

B. Interests and Temperaments

1. A pleasant personality

2. Leadership ability; firm, yet courteous

3. Good judgment under stress

4. Clean and neat in appearance

5. Good moral character

6. Emotional stability and psychological adaptability

IV. PHYSICAL DEMANDS

A. Normal good health.

B. Ability to lift and carry up to 100 pounds.

C. Visual color discrimination in examining patients and determining by appearance diagnostic signs that require immediate detection and proper action, as well as to distinguish traffic signs and lights.

D. Both far and near visual acuity necessary for driving and for examining the patient (correction by lenses permitted).

SAMPLE

INVITATION FOR APPLICANTS FOR THE POSITION OF EMERGENCY MEDICAL TECHNICIAN-AMBULANCE

THE CITY (COUNTY) OF ____________

INVITES APPLICANTS FOR

EMERGENCY MEDICAL
TECHNICIAN-AMBULANCE

SALARY RANGE

Effective ____________, $ ________ (entrance) per month for a 5-day week of 40 hours.

Part-time or intermittent service ________ per day; ________ per day additional up to ________ maximum per month for assignments as Emergency Medical Technician-Ambulance.

RESIDENCE

Current city residence is required for admission to the examination; however, once appointed to permanent positions, city employees may establish residence within _____ airline miles of City Hall.

AGE

Applicants must be ______ years of age or over on the last date for filing applications. Compulsory retirement age is 65 years.

LATE DATE FOR FILING APPLICATIONS: __________________ (Date)

Mailed applications must be postmarked not later than the last day for filing applications.

BEGINNING DATE OF EXAMINATION: ____________________ (Date)

The date of the written examination is subject to change. Qualified applicants will be notified by mail of the exact date, time, and place to report for examination.

CHARACTERISTICS OF THE CLASS: EMERGENCY MEDICAL TECHNICIAN-AMBULANCE

Under direction, supervises and accompanies an ambulance driver in responding to emergency calls; renders first-aid and other needed ministrations to ill or injured persons; and performs related duties as required.

Requires responsibility for: following established methods and procedures in rendering first aid in emergency cases; achieving economies and/or preventing moderate losses through proper handling of equipment, instruments, and facilities; making responsible contacts with the general public or specific persons for the purpose of obtaining information on specific matters at scenes of accidents, injuries, or other emergencies; gathering and preparing pertinent information. Nature of duties involves sustained physical effort with heavy lifting and manual effort and dexterity and with frequent exposure to traffic accidents, health hazards, and other disagreeable elements.

MINIMUM REQUIREMENTS

Possession of a valid (State) driver's license (to be presented at the time of filing application or shortly thereafter); AND EITHER:

1. Possession of a valid permanent (State) Registered Nurse Certificate; OR

2. One year of full-time paid experience within the last six years as a Medical Technician at a major medical facility which gives formal on-the-job training; OR

3. Three years of full-time paid experience within the last eight years in the administration of first aid to sick or injured persons and/or the giving of treatment as prescribed by a doctor, such experience to have been in honorable service in the armed forces medical service with a rating of at least Hospital Man Third Class or the equivalent, or in civilian work deemed to represent similar or comparable training and experience; OR

4. Possession of a mine disaster certificate and five years of first-class paid experience within the last ten years of mine disaster work.

NOTES

A. Because of the specialized nature of the work and the responsibility for human life involved all candidates must have work experience comparable to a Medical Technician. Employment records which do not indicate responsible experience in this field will not be considered as qualifying.

B. Applicants who have been members of the armed services during the period of time specified above will be allowed an extension of time equal to said service time to meet the requirements.

C. Experience claimed in self-employment will be considered only if supported by evidence of earnings and duties comparable to those of the position here announced.

D. A history of employment that shows frequent and unexplained changes of employers may be a basis for rejection of application.

SCOPE OF EXAMINATION

Subjects	Points
1. Written test on subjects related to duties and abilities as described in the Characteristics of the Class and such other knowledge as may be necessary for the proper performance of the work	700
2. Strength Test: A 125-lb. sack of sand must be lifted from the floor, placed on the shoulder, and returned to the floor without dropping. (Two trials allowed.) Those who fail to pass the strength test will be rejected. No reexamination in this test will be allowed	Qualifying
3. Practical test to determine ability to render first aid, including standard bandaging procedures	Qualifying
4. Qualifications Appraisal: Appraisal of the personal history and personal traits of applicants by	

Subjects	Points
oral interview in order to judge their competence and fitness to perform the duties of this position . . .	300
TOTAL POINTS	1,000

A qualifying rating must be attained in each part of this examination.

Issued: ______________________________

APPENDIX L

SAMPLE STATE ACT TO REGULATE AMBULANCE SERVICES

I. INTRODUCTION

This appendix is only one example of a STATE ACT to regulate ambulance services. It should be carefully examined by necessary legal counsel to determine its legal sufficiency and appropriateness.

II. SAMPLE ACT

Article 1. Definitions and General Provisions

Unless the context requires otherwise, the definitions in this article govern the construction of this chapter.

"Ambulance" means a vehicle which is designed or intended to be used in providing transportation of wounded, injured, sick, invalid, or incapacitated human beings to or from a place where medical or hospital care is furnished.

"Ambulance service" means:

A. Transportation for a wounded, injured, sick, invalid, or incapacitated human being, or expectant mother, to or from a place where medical or hospital care is furnished which is regularly provided, or offered to be provided, to the public by any persons or public or private agency.

B. Treatment which is provided, or offered to be provided, by any person employed to provide or assist in providing the transportation referred to in subdivision A, whether such treatment is provided, or offered to be provided, preliminary to such transportation, or after such transportation is completed.

"License" means a contract between a licensing agency and an operator to provide ambulance service within the boundaries of the licensing agency's jurisdiction.

"Licensing agency" means an emergency medical care committee. (Since such a committee is set up as the principal enforcement body under the Act, its composition, tenure, power, authority, and limitations should be set forth clearly in this article.)

"Operator" means a person who has a license from a licensing agency to provide ambulance service.

The Legislature hereby finds and declares that the operation of ambulance services within the State of ____________ constitutes a matter of Statewide and public interest and concern and that, in order to ensure that adequate ambulance service be provided within this State for the protection of the public health, safety, and welfare, it is imperative that minimum standards for ambulance service be established and enforced by the State, that no ambulance service be operated which does not at least comply with such minimum standards and which is not licensed by the licensing agency, and that adequate compensation will be received by ambulance operators affording this service to the public.

Article 2. Regulations

The State Department of Public Health shall adopt reasonable regulations which it determines to be necessary for the public health and safety relating to the operation, personnel, and equipment of ambulance services.

A. The enforcement of the initial regulations and those regulations adopted hereafter by the State Department of Public Health, shall be done by the licensing agency.

B. Licensing agencies may adopt further and additional regulations not in contravention of those adopted by the State Department of Public Health which the licensing agency deems necessary or advisable for their local jurisdiction.

C. The licensing agency shall also enforce those local regulations that they shall adopt within the area of their jurisdiction.

The regulations may prescribe different standards for emergency ambulance service than are prescribed for nonemergency ambulance service.

A. No provision of this chapter, nor any regulation adopted pursuant to this chapter shall be construed as limiting or affecting any other provision of law delegating to the Department of the Highway Patrol the authority to regulate or inspect the red lights, sirens, brakes, and mechanical adequacy and safety of the vehicle.

B. Nothing herein contained shall be construed as preventing cities from enacting additional regulations, not in contravention of the provisions of this chapter.

Article 3. Licenses

Notwithstanding any other provision of law, no ambulance service shall be operated in this State, other than ambulance service required to be provided by a licensing agency, unless the ambulance service is operated by a private person that has a license from a licensing agency to provide such service. A license for ambulance service shall include the following:

A. A schedule of fees to be charged for ambulance service which comply with regulations adopted pursuant to this chapter.

B. A provision that no ambulance service shall be provided unless both the driver of the ambulance and a technician on duty therein are trained to the DOT 81 hours level or approved equivalent course for emergency medical-technicians.

C. The area in which the operator shall provide service.

D. The license shall comply with all regulations established by the State department pursuant to this chapter, and those regulations adopted by the licensing agency.

If no license exists for any county within the State, the licensing agency may contract with an operator on such terms which it deems necessary to afford such service in that county.

All licensing agencies shall establish ambulance control zones, if necessary within their respective jurisdictions for emergency ambulance service in compliance with the regulations adopted pursuant to this chapter, and shall receive applications for the providing of ambulance service.

The licensing agency shall issue a license to any ambulance service which makes application to the licensing agency within 90 days from the effective date of this chapter and has been providing ambulance service for six months prior to the effective date of this chapter.

Notwithstanding any other provision of this chapter, after the issuance of licenses, additional licenses shall be issued by the licensing agency only upon proof by the applicant that there is an existing public necessity for such additional ambulance service.

Article 4. Violations

Violation of any of the provisions of this chapter or of the regulations adopted pursuant thereto is a misdemeanor. A violation is also grounds for suspension or revocation of any authorized emergency vehicle permit.

Article 5. Operation

This chapter, except for Article 2 and the regulations adopted pursuant thereto, shall become operative on ______________. Thereafter, all persons shall have one year to comply with the chapter and all regulations adopted pursuant thereto.

APPENDIX M

SAMPLE CONTRACTUAL AGREEMENT FOR AMBULANCE SERVICE

I. INTRODUCTION

This appendix is only one example of a contractual agreement for providing ambulance service. It should be carefully examined by necessary legal counsel to determine its legal sufficiency and appropriateness.

II. SAMPLE AGREEMENT

The following is an Agreement between the County of ___________,
State of ___________(hereinafter referred to as "County") and
__________________(hereinafter referred to as "Contractor"):

WHEREAS, County desires, in accordance with the exercise of its general police powers, to assure emergency ambulance service for all persons injured or otherwise incapacitated in incidents within the County of ____________ ; and

WHEREAS, Contractor is qualified and equipped to render such service,

NOW THEREFORE, THE PARTIES AGREE AS FOLLOWS:

I

DEFINITION OF TERMS

The following definitions shall apply throughout this Agreement:

A. Ambulance trip - Any trip made as a result of an official call or an emergency call, which trip is designated Code 11 by Communications.

B. Code 11 - An authorization number issued by Communications indicating that the call was dispatched or cleared through Communications.

C. Communications - The Communications Center of the County of ____________________.

D. Dry run - Any ambulance trip made as a result of an official call or an emergency call whereupon after responding to said call it is found that no ambulance is needed.

E. Emergency - Any injury, illness, or death arising out of any accident or sudden illness or declared to be an emergency by a doctor of medicine.

F. Emergency call - A call requesting ambulance services for an emergency.

G. Indigent - All persons who fall within the definition of medically indigent found in Section __________ of the __________ County Ordinance Code.

H. Lack of good moral character - The following are indicative of lack of good moral character: addiction to the use of narcotics or the excessive use of intoxicating liquors, false statements of material facts or practice of fraud or deception in connection with any test, application, or examination relating to the duties and qualifications required under this Agreement.

I. Peace officer - Any person designated as a peace officer by the laws of the State of ______________.

J. Physician - Any person duly licensed to practice medicine in the State of ____________.

K. Official call - A call for ambulance services placed by any governmental agency, any peace officer, or any physician.

L. On-duty personnel - The driver and technician who are stationed at the same location as the ambulance equipment and capable of responding immediately to each official call which is directed to them.

M. Suspension - A cessation of the rights and obligations under this Agreement for a certain period of time after which period the Agreement automatically is in full force and effect.

N. Zone of responsibility - Areas of the County designated by Communications in which Contractor has the primary responsibility to respond to emergency calls.

II

DUTIES OF CONTRACTOR

A. Response to Calls

Upon receipt of an official or emergency call, Contractor shall contact Communications to obtain a Code 11. If a Code 11 is obtained from Communications, Contractor shall respond to the call and transport each patient to the nearest hospital where there is a doctor on 24-hour duty unless otherwise directed by County or its authorized agents or a peace officer, or the patient or his physician. Provided that no emergency case shall be transported to a hospital outside the County of ________________, except that the Contractor in the __________ ________ zone of responsibility may take patients to the ________ ___________ Hospital or ______________ General Hospital in ______ ________ County, and the Contractor in the __________________ zone of responsibility may take patients to the ______________ Hospital in ____________ County.

B. Availability of Equipment and Personnel

1. Contractor shall keep ambulance equipment and on-duty personnel available on a 24-hour basis.

2. Contractor shall keep the availability, location, and status of all ambulance equipment current with Communications. Vehicles which do not have the required on-duty personnel in immediate attendance shall be considered "out of service" and shall be reported as such. In the event all available equipment is in use, Contractor shall immediately advise Communications that it cannot respond.

C. Maintenance of Equipment

1. Contractor shall obtain and keep in force any permits required by the State of   to operate each piece of ambulance equipment.

2. Contractor shall furnish ambulance equipment meeting the laws and regulations of the State of ________ and Contractor shall furnish such other equipment and items in addition thereto as may be prescribed by County of ____________.

3. Contractor shall maintain all equipment in a safe and sanitary condition.

D. Personnel

1. Contractor shall staff each ambulance with a driver of at least 21 years of age and a technician of at least 18 years of age, both of whom shall wear clean uniforms, who shall be neat and clean, and who shall be physically capable of performing the duties required of them. Both the driver and the technician shall be trained to the DOT 81 hours level or its approved equivalent. The driver and technician shall wear a name badge and carry proper identification containing a picture, description, and certification of training.

2. Each ambulance driver shall have passed an appropriate driver's test as prescribed by the laws of the State of ____________ and shall have in his possession a permit attesting to this fact. He shall also have completed the 81 hour level of training or its approved equivalent. He shall have passed an appropriate street and location test as prescribed by Communications and an emergency care examination.

3. Each ambulance technician shall have completed the DOT 81 hour level course or an approved equivalent and shall have passed an appropriate examination. Provided, however, that Contractor may use regularly employed trainees as technicians. Such trainees shall be issued an appropriate certificate and pass the emergency care test given by County within a reasonable time after their employment by Contractor.

4. Contractor shall furnish County monthly with a list of ambulance personnel, including trainees, and such information regarding their training and qualifications as County deems necessary.

E. Insurance

Contractor agrees to carry at its own cost and expense the following insurance:

1. Public liability insurance in the sum of not less than $250,000.00 for injuries to one person and $500,000.00 for injuries to more than one person in one accident.

2. Property damage insurance in a sum of not less than $25,000.00.

3. To carry the County of __________ as an additional insured on such insurance coverage and to file a certificate of such coverage with the General Services Agency of County. This contract shall be of no force and effect until such time as said certificate is filed and failure to keep such insurance coverage in full force and effect shall automatically render this contract null and void.

F. Collection and Billing

1. Contractor shall bill at least three (3) times within a 60-day period after the ambulance service has been rendered and shall provide County with evidence of such billing if requested to do so.

2. If a bill is not paid within the above mentioned 60-day period, Contractor may submit a claim to County for the unpaid portion of the bill at the rates set forth in Exhibit "A". The submission of the claim shall constitute an assignment to County of all Contractor's right, title, and interest in and to any such claim.

3. Contractor shall submit claim to County within six (6) months from the date the ambulance services were rendered.

4. Contractor shall comply with all State and Federal laws, rules, and regulations regarding billing under State and Federal medical care programs.

G. Inspection

1. Representatives of County may inspect Contractor's records for the purpose of determining compliance with the

provisions of this Agreement. Contractor shall permit, upon request of County, audits by County.

2. Contractor shall permit inspection by the County Communications Department of the electrical systems of all ambulance equipment utilized hereunder. The Communications Department shall render written reports of such inspection, noting any deficiencies. Contractor shall immediately correct any deficiencies noted in said report.

H. Compliance with Laws Relating to Ambulance Service

Contractor shall comply with all laws, rules, and regulations (Federal, State, and county) relating to ambulance service, including but not limited to maintenance and operation of equipment, and qualifications and training of employees.

III

DUTIES OF COUNTY

A. Payment of Claims

1. County shall pay, within fifteen (15) days after receipt of claims properly arising under this Agreement, at the rate schedule set forth in Exhibit "A," which is attached hereto and made a part hereof by reference.

2. In order for a claim to be considered as properly arising under this Agreement, it is necessary that Contractor shall have complied with all applicable terms of this Agreement.

3. No claims will be paid in the absence of reasonable proof that services therefor in fact have been performed.

4. No claim for dry runs shall be paid unless the claim contains the following information verified by Contractor: name of official placing call; time of call; point of pickup called for; reason for no pickup; and name and address of person for whom ambulance called, if known.

5. County shall notify Contractor within fifteen (15) calendar days after receipt of a claim when a claim is to be rejected and shall furnish and supply Contractor with all available information concerning the sources of revenue from which Contractor may collect for its services.

6. Ambulance trips which terminate at a local hospital, physician's office, or other treatment facility shall be considered as one complete trip with full basic and mileage rates applied.

7. If within thirty (30) minutes after original time of arrival at said point of termination, a subsequent trip is required to transport to another hospital or to a patient's home not more than fifteen (15) miles distant from the point of termination of first trip, it shall be considered a new and separate trip with one-half the basic and one-half mileage rates to apply. If such subsequent trip is to a point more than fifteen (15) miles distant, full mileage rates shall apply after the first fifteen (15) miles. Waiting time charges shall be as set forth in Exhibit "A."

B. Out-of-County Trips

County shall, so far as possible, distribute routine out-of-County trips between ambulance operators holding County contracts. Trips which call for extraordinary services shall be put up for bid. All other trips shall be paid for at the rates set out in Exhibit "A."

C. Two-Way Radio

County shall furnish and maintain two-way radio equipment in ambulance of Contractor for Contractor's use under this Agreement. Such radio shall remain the property of County and be subject to its control, supervision, and removal. Contractor shall be liable to County for the cost of any repairs and maintenance over and above that caused by ordinary wear and tear. Contractor shall carry insurance covering said equipment against loss or damage on account of fire, theft, or collision.

IV

ZONES OF RESPONSIBILITY

A. The zones of responsibility which are currently in use shall remain as the zones of responsibility throughout this Agreement.

B. Contractor shall not make any emergency call outside Contractor's zone of responsibility without approval of Communications.

C. Existing zones of responsibility shall not be altered without express consent of County and of the ____________County Ambulance Association. No new ambulance companies will be permitted to operate in said zones of responsibility without a clear showing to County of the public necessity therefor, a showing of the financial responsibility of the new ambulance company, and a showing that the new ambulance company is capable of meeting the terms of this Agreement.

V

EFFECT OF VIOLATION OF AGREEMENT

A. Violation of any of the terms of this Agreement by Contractor shall be grounds for suspension of the Agreement.

B. If it should come to the attention of County that any of the provisions of this Agreement are being violated by Contractor, County shall notify Contractor by telephone call to Contractor's owner personally and thereafter by confirmation in writing of such violation or violations. If the Contractor shall fail to correct said violation or violations three (3) days after receiving said notice, County shall have the right to suspend the operation of this Agreement until such violation or violations have been corrected.

C. The Ambulance Radio Operating Manual of Communications is expressly made a part of this Agreement.

VI

RELATIONSHIP OF THE PARTIES

This Agreement is an agreement by and between two independent contractors and is not intended to and shall not be construed to create the relationship of agent, servant, employee, partnership, joint venture, or association.

VII

ASSIGNMENT

Contractor shall not assign any rights or duties under this Agreement to a third party without the written consent of the Board of Supervisors of the County of ________________. Any such assignment in violation of this Agreement shall automatically terminate this Agreement.

VIII

TERM OF CONTRACT

Unless sooner terminated by either party upon giving thirty (30) days' written notice, this Agreement shall cover the period ______________ .

IN WITNESS WHEREOF, said parties hereto have executed this Agreement on the dates herein below shown.

Executed by the County of ______________, State of ________________
this __________________.

COUNTY OF ________________________

By ______________________________
Chairman of the Board of Supervisors

Executed by Contractor this ____________________________________

Address: ____________________________

APPROVED AS TO FORM:
By ______________________
County Counsel

APPENDIX N

ADDRESSES OF NHTSA REGIONAL ADMINISTRATORS

Region I
7:45 am – 4:15 pm
Regional Administrator, NHTSA
Transportation Systems Center
55 Broadway
Cambridge, Massachusetts 02142
    Connecticut
    Maine
    Massachusetts
    New Hampshire
    Rhode Island
    Vermont

Region II
7:45 am – 4:15 pm
Regional Administrator, NHTSA
200 Mamaroneck Ave., Rm. 400
White Plains, New York 10601
    New Jersey
    New York
    Puerto Rico

Region III
8:00 am – 4:30 pm
Regional Administrator, NHTSA
Rm. 817-B, Federal Building
31 Hopkins Plaza
Baltimore, Maryland 21201
    Delaware
    Maryland
    Pennsylvania
    Virginia
    West Virginia
    District of Columbia

Region IV
7:45 am – 4:15 pm
Regional Administrator, NHTSA
1720 Peachtree Rd., N.W., Suite 400
Atlanta, Georgia 30309
    Alabama
    Florida
    Georgia
    Kentucky
    Mississippi
    North Carolina
    South Carolina
    Tennessee

Region V
8:00 am – 4:30 pm
Regional Administrator, NHTSA
Suite 214 Executive Plaza
1010 Dixie Highway
Chicago Heights, Illinois 60411
    Illinois
    Indiana
    Michigan
    Minnesota
    Ohio
    Wisconsin

Region VI
8:00 am – 4:30 pm
Regional Administrator, NHTSA
819 Taylor St., Rm. 11A26
Fort Worth, Texas 76102
    Arkansas
    Louisiana
    New Mexico
    Oklahoma
    Texas

Region VII
7:45 am – 4:15 pm
Regional Administrator, NHTSA
P.O. Box 7085
Country Club Station
Kansas City, Missouri 64113
    Iowa
    Kansas
    Missouri
    Nebraska

Region VIII
7:45 am – 4:15 pm
Regional Administrator, NHTSA
330 South Garrison St.
Lakewood, Colorado 80226
    Colorado
    Montana
    North Dakota
    South Dakota
    Utah
    Wyoming

Region IX
7:45 am – 4:15 pm
Regional Administrator, NHTSA
450 Golden Gate Avenue
Box 36112
San Francisco, California 94102
    Arizona
    California
    Hawaii
    Nevada

Region X
7:45 am – 4:15 pm
Regional Administrator, NHTSA
8021 Federal Office Building
Seattle, Washington 98104
    Alaska
    Idaho
    Oregon
    Washington

Governor of the Virgin Islands
Government House 599
Charlotte Amalie
St. Thomas, Virgin Islands 00801

Governor of American Samoa
Office of the Governor
Pago Pago, American Samoa 96799

Governor of Guam
Office of the Governor
Agana, Guam 96910

Governor's Representative
Department of the Interior
Bureau of Indian Affairs
Division of Transportation (Room 3340)
19th & C Street, N. W.
Washington, D.C. 20242

APPENDIX O

EMERGENCY MEDICAL SERVICES PLANNING OUTLINE

The use of this planning outline meets the requirements for both the Departments of Transportation and Health, Education and Welfare for an Emergency Medical Service plan in accordance with Section VII, Standard 11 of the Highway Safety Act of 1966 and the Emergency Medical Services Act of 1973.

PLANNING OUTLINE

FOR USE IN DEVELOPING A COMPREHENSIVE EMS PLAN

AUTHENTICATION: Provide within the cover of the plan authentication by signature of the appropriate State or Local official.

I. ORGANIZATION FOR EMS PLANNING AND IMPLEMENTATION

This section should present a comprehensive description of the organizational structure which will manage the State program or individual project. A program should indicate how the structure is related to the community in which it operates; and where possible, present all staff or descriptions of staff capabilities to be utilized in administering the project.

(This is a recording of existing status. If establishment is not completed, but planned, so indicate. This section should show:)

A. Authority

(Describe agency, official with overall responsibility for EMS, and source of authority.)

B. Staff Structure

(May be presented by chart or diagram.)

C. Function Identification and Description

(Relate to I. B. above.)

D. EMS Planning Area Identification

(Regionalization; Hospital Districts; EMS Districts; or other structure for EMS planning and implementation.)

E. Advisory Groups

(Date State Committee and Local Council established; composition; meetings; and functions.)

F. Legislation

(Discuss those in existence, copies attached, and those planned; estimate when passage can be expected.)

1. Model Ordinance
2. Good Samaritan Laws
3. Medical Practice Acts
4. Licensing/Certification
5. Other Regulatory Measures

II. PLANNING INFORMATION

A. EMS Resources – Status "This is what is today."

A comprehensive description should be presented for the current EMS capability, to include subsystem capabilities. Detailed description should include, among other items

1. Services

   (Number, type, i. e., commercial or other, and location.)

2. Equipment

   (Numbers, year, and types of ambulances and rescue vehicles, with related medical equipment.)

3. Personnel

   (Number of personnel, full and part time, identified by levels of training, i. e., Standard, Advanced Red Cross, DOT 81-hour, and number untrained.)

4. Facilities

   (Hospitals and emergency rooms by area distribution.)

5. Communications

   Presence or absence of. (Two-way with hospital and what is the method of dispatching.)

6. Consumer Education

   (What is currently being done?)

7. Evaluation

8. Patient Flow Pattern

   (A description of the current patient flow pattern for an emergency situation. If no organized pattern exists, so indicate.)

B. Description of the Program Area.

This section should present a comprehensive picture of the State or lesser geographical area to be involved in the plan. It should contain information with regard to:

1. Demographic Information

   a. Population

      (By age and sex, by area distribution, and State totals.)

   b. Densities

      (By cities and planning areas.)

   c. Medical Personnel

      (Doctors, nurses, by area distribution.)

2. Area Characteristics

   a. Roads

      (Mileage by type.)

   b. High Accident Locations

c. Geographic Conditions

d. Climatic Conditions

(Influences on ground and air capabilities.)

e. Economic and Social Conditions

f. Disease Characteristics

g. Other Factors

(Industrial complexes, occupational dominance, and related hazards, etc.)

Maps and charts should be used to graphically describe the area covered by the plan.

III. EMS STANDARDS

(Describe those that exist and those to be established. Describe levels, methods, and criteria for performance.)

A. Organizational

B. Operational

State who has the authority and responsibility at the accident scene or other place of emergency.

C. Personnel Training

D. Ambulance Specifications

E. Response Times – Distribution

F. Communications

G. Hospital Facilities

IV. PROGRAM OBJECTIVES

A. Introduction

This should be a general introduction. It should contain information on the problem(s) and how it was identified. (Survey results and in-depth data analysis should be in an a appendix.) Information should also be given as to the need to overcome the problem. Problems and needs should be identified in such a manner as to make the objectives follow in a logical manner. Specifically

1. Identify Deficiencies and Needs
    - a. Equipment
    - b. Personnel and Training
    - c. Hospital Facilities
    - d. Communications
    - e. Distribution of Services
    - f. Legislative
2. Discuss Cooperation and Coordination Requirements

    (Discuss needs and plans relative to involvement of autonomous authorities, contiguous jurisdictions, independent associations, Comprehensive Health Planning Agencies, professional organizations and news media. Show by linkages and by Whom, How, Where, When and Why.)

B. Statement of Program Objectives

The objectives of the entire plan should be included under this section. They should be divided into three basic groups and address Standard 11 implementation (where applicable) and total EMS system developed.

1. Broad

This should describe the program in terms of what it will broadly achieve. For example, the following general statement:

> "To ensure that citizens in this (state, area, etc.) have rapid and easy access to effective, efficient and acceptable emergency medical services when they need those services."

2. General

This should relate to the overall program and address the various plan subsystems or components. These should be grouped by subsystem. Primary emphasis should be given to the subsystems of consumer education and information, communications, training, transportation, emergency care facilities and evaluation. To be comprehensive, a plan should also consider the other subsystems of continuing EMS interest in the development of an on-going system. These subsystems for consideration should include updated planning, organization, management, relationship to other health care delivery systems and other community functions, development of standards and legislation.

3. Specific

Specific objectives should be developed for each and every output item you expect to achieve within this plan. It is also requested that you present specific objectives in the same order as they relate to the General Objectives. These should be clearly, simply stated objectives in measurable terms, examples of which are listed below:

"By July 1, 1975, there will be:

.. Seven in-area hospitals with modernized emergency rooms; including four with complete ambulatory care clinics, three with modified clinics and one satellite clinic in   County where no hospital exists. These will be Category   Emergency Departments.

.. 31 modern, Department of Health certified, equipped to DOT standards ambulances capable of response anywhere within the ________ square mile area in approximately 20 minutes at most. These will be housed in new or renovated facilities; 14 vehicles hospital based. They will be manned by at least two EMT-A trained personnel.

.. 450 state-certified emergency medical technicians, with at least 60 on fulltime employment parttime and volunteers serving the area around-the-clock.

.. a microwave communication network linking EMS central headquarters to all ambulance stations; all vehicles; all emergency medical technicians who are either on-duty or on-call at each; and cross-monitoring and calling capability to other public service networks such as police, fire, highway patrol, civil defense, etc. The transmit-receive capability of this network will be such that despite the many hills and deep valleys in the area there will be no "blind spots" whereby mobile units will be unable to receive or to be heard by central headquarters when transmitting. Utilizing the transmitting capabilities by the EMS network there will be separate hospital frequencies and equipment allowing for in-and-between hospital communication as well as linkage with central dispatch and all emergency service vehicles."

Please note each specific objective should be defined as precisely as possible in measurable terms and in a time frame.

C. Program Objective Priority

Describe the order of priority in the Statewide or lesser program effort to achieve the objectives listed above.

V. PROGRAM IMPLEMENTATION

A. Introduction - "This is what will be when the plan is fulfilled."

This section should present an overview of the projected capability that will exist after completion of the plan. Specific interest should be given to a description of the types of emergency medical services to be included, the status of subsystems and the community involvement. Include here a description of the projected patient flow for a typical patient.

B. Description of Methodology to Achieve Objectives

Specific details should be set forth for the development of each specific objective. It is important in this portion of the plan to present sufficient information on each specific objective stating how it will be developed and how the change is going to be affected during the implementation period.

In discussing your approach to each of the objectives and subsystems, specific details should be presented. Linkages among subsystems should be addressed, the specific objectives for each subsystem should be covered, and major milestones should be defined in the description.

For each specific objective develop a specific implementation plan. The steps should be sequenced and time related (minimum and maximum times). They should be related to the resources, manpower needed and available. They should be related to priorities:

Restate each specific objective and follow it with:

1. A statement of methodology to achieve the objective.
2. An evaluation procedure which will indicate not only how you know when you have achieved the objective but how well you are doing along each step of the way toward achievement. These should be listed as milestones.
3. An identification of the resources needed. At a minimum, discuss manpower, materials, money and time. Contemplated equipment purchases of greater than $100 should be identified and listed.
4. The starting date, an end date and a schedule of activities. (In both 3 and 4, where it is not yet possible, indicate what options are available.)

VI. PROGRAM IMPLEMENTATION SCHEDULE

Combine the milestones for each objective onto one sheet(s) so that each milestone is clearly identified in relation to others. (See examples pp. O-17 & O-20.) This should be updated annually. This should reflect all project efforts including DOT and HEW where applicable.

VII. PROGRAM RESOURCE SUMMARY

Combine the resources needed onto one chart(s) and total. The purpose is to show what resources will be required to implement the total EMS system and who will commit resources. (Relate to IV A2.)

VIII. PROGRAM COMMITMENT SUMMARY

List each person/organization responsible for implementing plans and identify the objectives or parts thereof for which they are responsible. (Relate to IV A2.)

IX. BUDGET SCHEDULE

It is requested that this section contain an estimated rate of expenditure with supporting justification for labor, labor related, equipment and capital expenditures by month. This should be done by specific objectives on a quarterly basis.

X. EVALUATION

Two types of evaluation, program evaluation and effect on patient outcome, should be emphasized.

A. Program Evaluation

This major section of the evaluation component will highlight the program from the evaluation point of view.

1. General

This sub-section should briefly summarize the overall program keeping in mind the general objectives. Reference can be made to Part IV.

2. Specific

Those aspects of the program which can be considered as unique or innovative should be noted here and related, as appropriate, to the specific objectives given earlier.

3. Evaluation Task Sequencing

In each program, it is important that the evaluation task be well described and that its time-sequencing be detailed. Specific aspects of the evaluation task must be planned during the program. This sub-section should well provide sufficient detail to monitor each Evaluation Task of the Program.

4. Data Requirements

In this major section those quantitative and qualitative measures which are essential for the evaluation of the program objectives should be listed and related back to the appropriate objectives. Discuss status and present activity if any.

a. Data Collection

(Identify data used, sources, and how collected.)

1) EMS Inventory Data

2) EMS Response Data (Proficiency-effectiveness)

b. Data Flow

(Reduction, storage/retrieval, and distribution.)

5. Data Collection Plans

This section should highlight the kinds of data generation methods available to satisfy program objectives. Data may be necessary in such areas as parts, materials, components, hardware systems and subsystems, operating procedures, management systems, attitudes and costs, The plans presented in this section should be capable of tying together the specific set of project variables with the appropriate program objectives. A given data collection plan may yield a data set which can be related to several objectives. At least four broad categories of data collection plans suggest themselves. There may be others. The four specific categories follow:

a. During the conduct of a program, it may be possible to study the effects of varying a number of factors on selected measures of the program's performance or effectiveness. Such a data collection plan, where the effects of varying certain factors can be measured, will be referred to as an experimental plan. A given program may call for several experiments.

b. In order to obtain attitudinal, behavioral, and demographic information from persons affected by the programs, it may be necessary to design a sample survey which will yield the necessary information on which to evaluate objectives or to characterize the "people" populations of interest. A program may call for several sample surveys.

c. In many cases, existing, or slightly modified, data collection systems may be used to provide needed baseline information, as well as to monitor selected variables as system changes occur. Sources for these data records, as well as specifics of the data forms and collection procedures, should be detailed. Numerous such data collection systems will be appropriate for each person.

d. Frequently, it is possible to conduct basis "paper studies" which will yield specific output useful in evaluating program objectives. Examples would be establishing the effect of varying engineering parameters on expected hardware performance and the development of simulation models to evaluate alternative system and operational concepts. Numerous such analyses will probably be appropriate for each program.

6. Data-handling and Analysis

a. Methods Employed

This section should indicate methods which will be employed in analyzing the collected data. It is not necessary that the details of the computational procedures be presented although it may be. It would be highly desirable. As data analysis proceeds, it may suggest alternative approaches to analysis. It is, however, imperative that analysis methodology be clearly stated for each objective and its associated measures.

b. Distinctions

A careful distinction should be made between two fundamental methods of analysis. In the first case, estimates of true characteristics associated with an EMS program can be made either from carefully collected sample information or from historical records. In the second case, the introduction of a system change or perturbation may bring about subsequent changes in system output measures or in user or community attitudes or behaviors. It is important, either to estimate the magnitude of this change, or to determine whether a specifically desired level of change has been achieved. This section should highlight how these two approaches will be used in evaluating the achievement of project objectives. Detailed statistical methods, while desirable, are not necessary in this section but will be required as the program progresses.

3. Program Constraints and Limitations

(This section should consider the way in which external factors might influence program results. In addition, attention must be directed to considering the constraints on the program imposed by political, economic, and social limitations. The latter, in all probability, cannot be controlled from an experimental viewpoint, but can be carefully considered during program evaluation. External, or exogenous factors, are those which are beyond program control, but which may influence program results. Examples here might be the dramatic effect of weather changes on the transportation subsystem performance, or an unexpected independent effort by a citizens' group to improve EMS both of which are outside of the control and management of the program. Where apparent cause and effect relationships can be clearly identified, these should be included in the program evaluation.)

B. Evaluation of the Effect of the System On the Patient

(Not all organizations have the skilled personnel to accomplish this type of evaluation. In those that do, the comments made in Section A above should apply. In those that do not, indicate such and comment on how the quality of care will be assessed. Evidence of lifesaving, injury reduction, improved response and cost effectiveness should be recorded here.)

XI. APPENDICES

Appendices of supporting information not covered in this plan may be included. It is requested that one appendix be supplied, including a map of the State, regional or program area of such a scale that major medical facilities, communication centers, etc., can be denoted for display purposes. Also include:

- Organization table
- Planning areas
- Vehicle Specifications
- Proposed Legislation
- Data-gathering Instruments
- Communications Plan (see Table of Contents and Appendix P)

NOTE: Other appendices may be added in the form of charts, data, etc., which aid in presenting information pursuant to this plan. Number the pages of each appendix separately and precede each page number with appendix letter identifier; i.e., A-16 for Appendix A page 16. Make references to the appendices in the plan in the same manner; i.e., (B-12) for reference to Appendix B page 12.

SPECIAL NOTE: When using this outline for a project plan substitute the word project for the word program whenever it appears except for instruction paragraphs under I page 1 and XI page 11. If this outline should also be used in developing regional or area plans, appropriate word substitution should also be made as above.

NOTICE: Your evaluation of the completed plan.

Your plan should be evaluated by your staff. The criteria for evaluation should be directed toward both the process of the plan and the content as follows:

1. Has the plan been approved and signed by the appropriate officials? (State or otherwise)

2. Was the program plan outline followed?

3. Objectives

   a. Are there objectives?
   b. Are they clearly stated?
   c. Are they simply stated?
   d. Are they measurable?
   e. Are they relevent to the total EMS system?

4. Have priorities of implementation been set? What criteria were used to establish priorities?

5. Have the resources (manpower, money, equipment, others) been identified?

   a. Have the needed resources to achieve the objectives been identified?
   b. Have the local resources been identified?
   c. Have the State resources been identified?
   d. Have the Federal resources been identified?
   e. Have the manpower resources been identified?
   f. Has the action responsibility been assigned?

      1) by organizational unit
      2) by person

   g. Have you indicated to what degree the current resources can satisfy needs?

6. Have schedules been established?

   a. Are there minimum and maximum times identified?
   b. Are there alternate schedules in the event of problems?

c. Are the schedules sequenced?
d. Are the schedules related to the sequences and the targeted date of accomplishment?

7. Have costs been established?

a. Are the costs projected quarterly?
b. Are the costs projected in relation to the time schedule?
c. Does the cost plan allow for a "fudge factor?" (Inflation)

8. Are there controls built into the plan?

a. Is there a method of feedback for future decisions built into the plan?
b. Is there a method of follow-up built into the plan?
c. Is there a method of following progress built into the plan?

9. Have the evaluation plans been structured?

a. Is there a management evaluation?
b. Is there a technical process evaluation?
c. Is there an outcome evaluation?

10. Have the activities been identified by:

a. Which must proceed which?
b. Which may be done concurrently?
c. Time constraints?
d. Uniform work schedules for personnel?
e. Resource availability?

11. Are activities grouped by common features:

a. Common preceding activities?
b. Concurrent use of personnel and/or resources?

(Milestone Examples)

August - September 1972

. . . . Key personnel recruited.
. . . . Specifications for ambulances prepared and advertised for bid.
. . . . Instructor training school opens.
. . . . Management staff organized.
. . . . Temporary headquarters leased.
. . . . Leases and agreements consummated for easements on tower locations and ambulance operation.

October 1972

. . . . Bids opened and award made for purchase of ambulances.
. . . . Advertisements for bids of communication system.
. . . . Recruitment for ED staffing begins.
. . . . Evaluation of pre-existing condition on EMS service begins.
. . . . Develop data gathering and data handling methods.
. . . . Begin basic EMT training courses in selected areas.
. . . . Recruitment of evaluation and education personnel.
. . . . Begin public information programs to consumers.
. . . . Develop baseline data for evaluation.

November 1972

. . . . Delivery for ambulances begins.
. . . . Award Bid for communications systems.
. . . . Begin recruitment for fulltime and volunteer EMTs.
. . . . Survey of present status of vehicles, equipment and personnel.
. . . . Renovation and construction of ambulance station begins.
. . . . Begin construction of permanent headquarters.
. . . . Begin recruitment for ED physicians.

December 1972

. . . . Complete erection of communications towers.
. . . . Begin installation of mobile radio unit.

January 1973

. . . . Completion of instructor training school.
. . . . Begin interviews with 1,200 households for baseline data.

. . . . Place public information and consumer education programs in operation.
. . . . Begin intensive training programs with 10 concurrent sessions.
. . . . Accept final delivery of ambulances.
. . . . Complete installation of mobile radios.
. . . . Begin survey of EMS utilization patterns.
. . . . Initiate contract with schools for EMS development programs.
. . . . Begin installation of ED equipment.
. . . . Let contracts for renovations.

February 1973

. . . . Complete construction and renovation of ambulance stations.
. . . . Place all vehicles in operation status at stations.
. . . . Headquarters building completed.
. . . . Begin installation of communications equipment.
. . . . Complete fiscal administration, forms and procedure study implement recommendations.

March 1973
. . . . Complete renovation of ED facilities.
. . . . Introduce access in listings and standardized data collection forms for emergency squads.

April 1973

. . . . Complete installation of communication system.
. . . . Train EMTs on mobile communications operation.
. . . . Initiate post change status study for first year operation.

May 1973

. . . . Communications system to become completely operational.
. . . . Basic training to be completed for EMTs.
. . . . Implement continuous in-service and ED training for EMTs.
. . . . System fully operational.

June 1973

. . . . Prepare first year report.

July 1973

. . . . Submit applications for funding of additional vehicles.
. . . . Advertise for bids on telemetry equipment.

August 1973

. . . . Award bid for telemetry equipment.

September - October 1973

. . . . Complete installation of telemetry equipment.
. . . . Advertise for bids for ambulances.

November 1973

. . . . Award ambulance bids.

December 1973

. . . . Accept delivery of vehicles.

January - December 1974

. . . . Continuing service and development programs.

January - December 1975

. . . . Continuing service and development programs.

IMPLEMENTATION SCHEDULE

	1974 CY				1975 CY				1976 CY			
Consumer Education	1	2	3	4	1	2	3	4	1	2	3	4
Recruitment of key program personnel.	----	----	----	----								
Development of public information program.	----	----	----	----	-	CONTINUING	PROGRAM	-	----	----	----	----
Prepare and Project educational aids to inform public of EMS transportation Communications system.	----	----	----	----								
Initiate an extensive review of existing literature related to educational programs for EMS.	----	----	----	----								
Assist in gathering baseline data. Initiate public information and consumer educations programs.	----	----	----	----								
Develop and initiate preliminary plans for evaluation of public information and consumer education programs.					----	----	----	----				
Initiate contract with schools and community groups concerning development of EMS demonstration programs.					----	----	----	----				
Develop a series of program plans for community demonstration programs.					----	----	----	----				
Recruit personnel for educational program.					----	----	----	----				
Assist in evaluation of public information and consumer education programs.	----	----	----	----	----	----	-	CONTINUING	PROGRAM	-	----	----

APPENDIX P

GUIDELINES FOR DEVELOPING AN EMS COMMUNICATIONS PLAN

(To be published)

When published this appendix will provide an outline for a State EMS Communications Plan. This plan will be prepared and submitted separately as Appendix F, "Communications Plan to the State Comprehensive EMS Plan."

APPENDIX Q

MODEL DOCUMENT FOR ESTABLISHING ADVISORY GROUPS*

EMERGENCY MEDICAL SERVICE ADVISORY ____________

STATE OF ____________

ORGANIZATION AND PROCEDURE

ARTICLE I

Name

The name of this advisory group is the Emergency Medical Service Advisory ____________ -State of ____________.

ARTICLE II

The Emergency Medical Service Advisory ____________ shall have the following objectives:

1. Survey emergency medical resources available to citizens and visitors to the State.
2. Make recommendations regarding hospital emergency departments, ambulance services, training programs, facilities and communications systems and related legislation.
3. Serve in an advisory role to the State Department of Health in its Emergency Medical Services Program.
4. Review and comment on major federal fund requests for improvement of emergency medical service capabilities.
5. Serve as a catalyst to effect cooperative arrangements for improving and best utilizing emergency medical resources in ____________ .** (This should include promoting and guiding the development of emergency medical service projects designed to meet identified needs on the local or area level.)

---

*Iowa Model.

**Identify by name of State, County, City, etc.

6. Develop and implement a comprehensive State Emergency Medical Service Plan.

ARTICLE III

Item 1 Representation

Members of the ____________ will be appointed by the Governor. Recommendations by a sub-committee of the ____________ will review and determine appropriate groups which need to be represented on the Advisory ____________. Sub-committee recommendations will be reviewed and approved by the ____________ and then recommendations will be submitted to the Governor.

Item 2 Size of ________________________

The size of the Emergency Medical Service Advisory for the State of ______ shall be fifteen (15) members.

Item 3 Terms of Members

Members will be appointed for three year terms. The terms will be staggered so that each year the terms of five (5) members expire.

Item 4 Alternate Members

The appointed members of the ____________, may in their absence, designate alternate members to attend meetings.

Such designation shall be made in writing to the ____________ Chairman for any meeting an alternate attends. The alternate so designated shall be eligible to vote on actions considered by the ____________.

ARTICLE IV

Meetings

Item 1 Regular Meetings

The Emergency Medical Service Advisory __________ shall meet quarterly and at other times as necessary.

Item 2 Annual Meeting

The first meeting of each year shall be the Annual Meeting.

Item 3 Special Meetings

Special meetings of the __________ may be called by the Chairman or at the request of one-third (1/3) of the __________ membership.

Item 4 Notice of Meetings

Notice of regular meetings shall be mailed to each member of the __________ at least two weeks (14 days) prior to the meetings. Notice of special meetings shall be the same except that one week (7 days) notice is required.

Item 5 Quorum

Quorum for the Emergency Medical Service Advisory __________ meetings shall be two-thirds (2/3) of the appointed members, or their designated alternate.

Item 6 Voting at Regular or Special Meetings

A simple majority of votes entitled to be cast on a matter by the appointed members present shall be necessary for adoption.

Item 7 Voting Between Meetings

Mail, telephone or telegraphic action on a matter shall be permitted. Concurrence of two-thirds (2/3) of the appointed members is required. Such action must be ratified at the next regular meeting of the __________.

Item 8 Meeting Minutes

__________ meeting minutes will be mailed to all Advisory __________ members within three weeks after the meeting.

ARTICLE V

Officers

Item 1 Officers

Officers of the Emergency Medical Service Advisory __________ shall be a Chairman and Vice Chairman. These officers shall be members and shall be elected by a majority of the members present.

Item 2 Time of Election

The election of officers shall be held at the Annual Meeting.

Item 3 Term of Office

Term of office shall be for one year or until a successor shall have been elected and qualified. Officers may succeed themselves for two terms.

Item 4 Vacancies

Vacancies in office may be filled by a majority vote of members present at any regular meeting of the __________. Officers so elected shall serve until the next Annual Meeting.

Item 5 Chairman

The Chairman shall preside at all meetings of the __________. He shall appoint the Committee and Task Force Chairman.

Item 6 Vice Chairman

In the absence of the Chairman, or his inability to act, the Vice Chairman shall perform the duties of the Chairman. When so acting he shall have all the powers of and be subject to all restrictions upon the Chairman. The Vice Chairman shall also perform such other duties as may be assigned to him by the Chairman.

ARTICLE VI

Task Forces

Item 1 Original Task Forces

The following Task Forces shall be established to study matters within their designated fields including the conduct of special studies referred to them by the ____________ and to report their findings, together with such recommendations as may emerge from their studies:

1. Ambulance and Rescue Service Organization and Operation
2. Emergency Medical Service Communications
3. Emergency Personnel and Training
4. Hospital Emergency Facilities
5. Hospital ED personnel and training

Item 2 New Task Forces

New Task Forces can be appointed when deemed advisable.

Item 3 Appointments of Task Force Members

1. The Chairman of each Task Force shall be appointed by the ____________ Chairman and shall be selected from the membership.
2. There shall be no fixed limit on the size of any Task Force. Size shall be determined by the Task Force Chairman, in consultation with the ____________ Chairman, based on the Task Force's prospective undertakings and requirements in specialized knowledge. The size of the Task Force may be changed from time to time to reflect changing needs.
3. The selection and appointment of the ____________ members to the Task Forces shall be made by the Chairman of the ____________ after consultation with the Chairman of the Task Force.

4. The Chairman of the Task Force, after consultation with the Chairman of the __________, shall make the appointment of non-__________ members to the Task Forces and to their sub-groups.

5. The Chairman of the Task Force shall appoint sub-groups and designate their Chairmen as necessary.

Item 4 Guidelines for Task Force Organization

1. Each Task Force is authorized to have a Vice Chairman, who need not be a member of the __________.

2. The Task Force may form such sub-groups as required. Sub-group members need not be members of the ________ or Task Force.

3. Specialists concerned with emergency medical services may be asked to serve as consultants to the Task Forces and their sub-groups, and to provide staff services.

ARTICLE VII

Areawide Emergency Medical Service ______________

Item 1 The __________ shall encourage the formation of Areawide Emergency Medical Service Councils or Committees in each Areawide Comprehensive Health Planning Agency.

Item 2 The Council shall coordinate its activities with those of the Areawide Councils both through seeking input from the Areawide Councils and through notifying them of plans, actions and activities of the State Emergency Medical Service Advisory Council.

ARTICLE VIII

Parliamentary Authority

The Emergency Medical Service Advisory __________ shall conduct business according to Robert's Rules of Order (Revised), except where they are in conflict with these Procedures Rules as adopted or amended.

ARTICLE IX

Amendments

These Procedural Rules may be amended, altered, or repealed and new procedural rules may be adopted by a two-thirds (2/3) majority of members present at any Council meeting provided two weeks (14 days) written notice of the proposed change(s) is given to the membership.

NOTE: This document may be used for the establishment of advisory groups at all levels of government. It may be used for committees, councils, groups, etc. Blank spaces should be completed with the word council, committee or other collective term as applicable.

APPENDIX R

CERTIFICATE OF COMPLETION FOR NHTSA/EMS TRAINING COURSES

I. PURPOSE

This Appendix provides a procedure for formal recognition of those persons who have completed one or more of the training courses in the NHTSA/EMS Training Program.

II. CERTIFICATES

The Certificate of Completion (Exhibit I) is authorized, and its issue to all personnel is encouraged upon completion of one of the courses in the DOT/NHTSA Emergency Medical Services Training Program. The certificates are 8-1/2" x 11" and suitable for mounting in a standard picture frame. Space has been provided for imprinting a State seal on the lower left side, if the State so desires. Space is also available for affixing serial numbers should the State require a serialized record of individuals receiving the certificates.

III. USE

A. Action

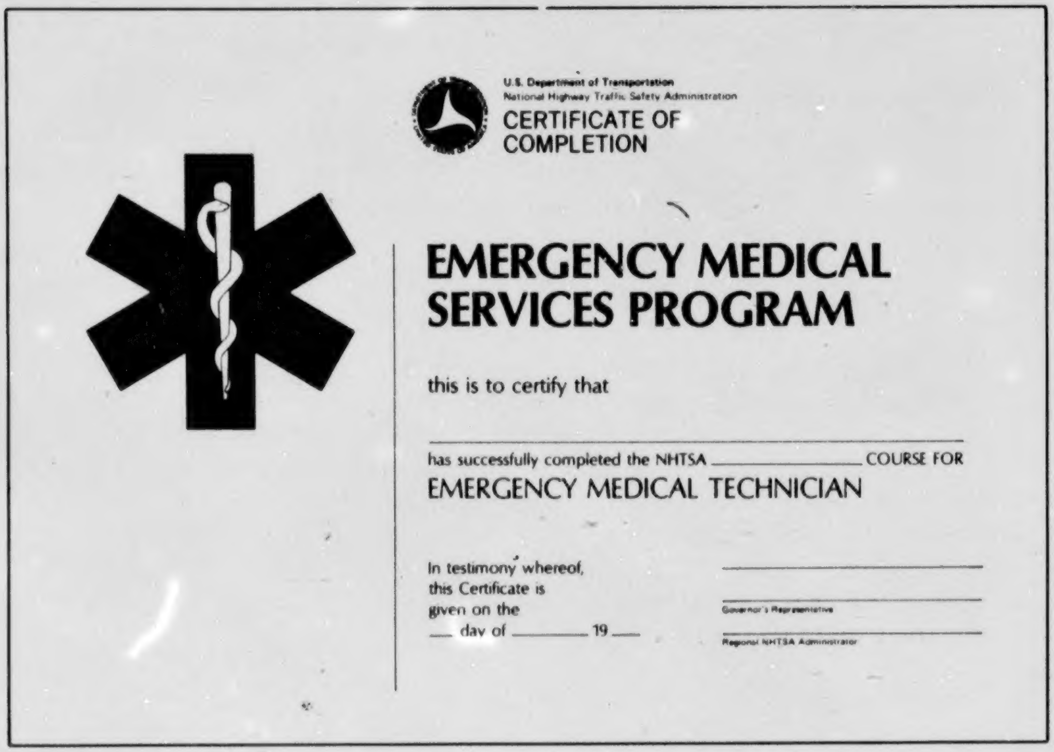
It is recommended that these certificates be made available to the States and their issuance encouraged upon receipt of this directive. The certificate may be used for the total EMS Training Program, i. e., issuance for completion of the "Refresher" as well as the "Basic" Training Courses and, also, the other courses when published. They may be issued on a retroactive basis to those persons who have completed a DOT/NHTSA course prior to issuance of this Manual Revision and appendix.

B. Restrictions

There are certain legal and policy implications of association relative to the issuance of this certificate as follows:

1. The certificate does not infer a license role for DOT/NHTSA. Such role, if any, is properly the responsibility of the State.

EXHIBIT I



U.S. Department of Transportation
National Highway Traffic Safety Administration
CERTIFICATE OF
COMPLETION

EMERGENCY MEDICAL
SERVICES PROGRAM

this is to certify that

____

has successfully completed the NHTSA ________________ COURSE FOR
EMERGENCY MEDICAL TECHNICIAN

In testimony whereof,
this Certificate is
given on the
___ day of _________ 19 ___

____

____
Governor's Representative

____
Regional NHTSA Administrator

2. DOT/NHTSA is in no way exercising authority over the trained Emergency Medical Technician.

3. The issuance of the certificate is elective or optional on the part of the States, and no DOT/NHTSA imposition is implied.

C. SIGNATURES

Signatures should be applied to each certificates as indicated thereon. The NHTSA Regional Administrator may use a "facsimile" signature on the line provided.

D. Administration

1. States may elect to set up a program for "refresher" training to maintain the skills and knowledge represented

by the initial certificate. Subsequent certificates may be issued for such refresher courses, as well as the "advanced" course, dispatchers course, and extrication course, when published and completed.

2. Each State is requested to forward to the Regional Office, on an annual basis, the number and affiliation – full or part-time – of those awarded the certificate.
3. The States and Regions should ensure that the certificates are being issued only for the DOT/NHTSA courses and not for courses which purport to be equivalents.

V. SUPPLIES

There will be no charge for the certificates. Additional copies of the blank certificates may be ordered from the General Services Division (N48-51), Office of Administrative Services, NHTSA, through the Regional Office.

APPENDIX S

AMBULANCE AND EMERGENCY ROOM REPORT FORMS

The report forms contained in this appendix were developed by the state of New York and used extensively in data gathering. They were revised numerous times until the data elements and form design achieved the highest degree of acceptance and utility.

These forms are provided in this manual as examples. Exhibit I is the Ambulance Report form, including the General Instructions, which is made out in triplicate with distribution as indicated on the bottom of each sheet (printed as one sheet here). Exhibit II is the Emergency Room Check Sheet which goes into the patient file along with the hospital copy of the Ambulance report form.

It should be recognized that data gathering should have as a prime objective the constant improvement and upgrading of service. It should serve as a basis for communication between the hospital staff and ambulance personnel to further enhance emergency medical care. The data gathering process must not be used to derogate. To achieve the above it must always be held in the strictest confidence.

The states should also use the data for planning and analysis to determine the extent to which resources are meeting needs.

EXHIBIT 1

Do not write in these spaces ▶ ☐☐☐☐☐☐ 6 7 8 9 10 11

COUNTY AND AGENCY CODES ☐☐☐☐☐ 1 2 3 4 5 1 AMBULANCE # ☐☐☐ 14 15 16 CASE/RUN # ☐☐☐ 19 20 21

AMBULANCE REPORT

AGE YEARS ☐☐ 22 23
(Only for Infants under 1 Year) MONTHS ☐☐ 24 25

AGENCY NAME ______
PATIENT NAME ______
HOME ADDRESS ______ SEX M ☐ 26 F ☐
______ TELEPHONE # ______
INSURANCE CARRIER # ______ ☐ MEDIC ALERT TAG ______

Date of Run – MONTH ☐☐ 41 42 DAY ☐☐ 43 44 YEAR ☐☐ 45 46
☐ Same as Above 47
Date of Incident MONTH ☐☐ 48 49 DAY ☐☐ 50 51 YEAR ☐☐ 52 53

5 **TIME** (MILITARY)
Incident Occurred ☐☐☐☐ 13 14 15 16
Call Received ☐☐☐☐ 17 18 19 20
Ambulance en Route ☐☐☐☐ 21 22 23 24
Arrived Location ☐☐☐☐ 25 26 27 28
Departed Location ☐☐☐☐ 29 30 31 32
Arrived Destination ☐☐☐☐ 33 34 35 36
Ready for Service ☐☐☐☐ 37 38 39 40

[illegible]
27 ☐ Abortion/Miscarriage
28 ☐ Asthma
29 ☐ Cardiac Problems
30 ☐ Communicable Disease
31 ☐ Emphysema
32 ☐ Insulin Shock
33 ☐ Maternity
34 ☐ Stroke/CVA
35 ☐ Not Determined
36 ☐ Other ______ SPECIFY

CAUSE OF INJURY
39 ☐ Motor Vehicle Collision
40 ☐ Vehicle/Ped. Incident
41 ☐ Motorcycle/Bike
42 ☐ Violence
43 ☐ Electrical
44 ☐ Fall
45 ☐ Immersion
46 ☐ Mechanical Equipment
47 ☐ Recreation Activity ______ SPECIFY
48 ☐ Other ______ SPECIFY

[illegible]
Abnormal behavior similar to:
51 ☐ Alcohol intake
52 ☐ Drug Overdose
53 ☐ Mental Condition
Bleeding:
54 ☐☐☐ Minor
57 ☐☐☐ Moderate
60 ☐☐☐ Severe
63 ☐ Breathing Diff.
64 ☐ Resp. Arrest
65 ☐ Cardiac Arrest
66 ☐ Card. Arrhythmia
67 ☐ Chills
68 ☐ Convulsions
69 ☐ Cyanosis
70 ☐ Fever
71 ☐ Nausea/Vomiting
72 ☐☐☐ Pain
75 ☐ Shock
76 ☐ Weak/Faint
77 ☐ Other
78 ☐ None

2 **[illegible]**
13 ☐☐☐ Head
16 ☐☐☐ Eye
19 ☐☐☐ Face
22 ☐☐☐ Neck
25 ☐☐☐ Upper Arm–Shldr.
28 ☐☐☐ Lower Arm–Elbow
31 ☐☐☐ Wrist-Hand-Fingers
34 ☐☐☐ Back
37 ☐☐☐ Chest
40 ☐☐☐ Abdomen
43 ☐☐☐ Pelvic Region
46 ☐☐☐ Upper Leg–Hip
49 ☐☐☐ Lower Leg–Knee
52 ☐☐☐ Ankle–Foot–Toes
55 ☐☐☐ Multiple

[illegible]
☐ 1 Conscious
☐ 2 Semi-Conscious
☐ 3 Unconscious
56

[illegible]
☐ 1 Improved
☐ 2 Unchanged
☐ 3 Worsened
57

3 **[illegible]**
13 ☐☐☐ Abrasion
16 ☐☐☐ Amputation
19 ☐☐☐ Asphyxiation
22 ☐☐☐ Avulsion
25 ☐☐☐ Burn
28 ☐☐☐ Concussion
31 ☐☐☐ Contusion-Bruise
34 ☐☐☐ Crushing
37 ☐☐☐ Dislocation
40 ☐☐☐ Fracture
43 ☐☐☐ Internal
46 ☐☐☐ Laceration/Cut
49 ☐☐☐ Poisoning
52 ☐☐☐ Puncture
55 ☐☐☐ Sprain/Strain
58 ☐☐☐ Other ______ SPECIFY
61 ☐☐☐ Not Determined

☐☐☐☐ 44 45 46 47
☐☐☐☐ 48 49 50 51
DO NOT WRITE IN THE ABOVE SPACES

PATIENT TAKEN FROM — LOCATION A ☐ 41
______ B ☐ 42
STREET HWY. RT. NEAREST INTERSECTION
______
CITY STATE ZIP

PATIENT TAKEN TO — DESTINATION C ☐ 43
______
HOSPITAL OR OTHER DESTINATION

MILEAGE
To Location ☐☐☐ 52 53 54
From Location to Destination ☐☐☐ 55 56 57
To Base ☐☐☐ 58 59 60
Total ☐☐☐

[illegible]
N.Y.S. E.M.T. #
______ DRIVER ☐☐☐☐☐ 61 62 63 64 65
______ ATTENDANT ☐☐☐☐☐ 66 67 68 69 70
______ ATTENDANT ☐☐☐☐☐ 71 72 73 74 75

D ☐ 76 E ☐ 77 F ☐ 78 G ☐ 79

4 **AID GIVEN TO PATIENT** ☐ 1 At Scene ☐ 2 En Route
13 ☐☐ Cleared Airway
14 ☐☐ Suctioned Airway
15 ☐☐ Airway Tube
16 ☐☐ Endotracheal Tube
17 ☐☐ Artificial Respiration
18 ☐☐ Oxygen
19 ☐☐ Defibrillator
20 ☐☐ Monitor (Cardiac)
21 ☐☐ Cardiac Compression ______ TIME STARTED
22 ☐☐ Controlled Bleeding
23 ☐☐ Bandaging
24 ☐☐ Obstetrical Delivery
25 ☐☐ Cold Application
26 ☐☐ Neck/Spine Immobilization
27 ☐☐ Limb Splints
28 ☐☐ Traction Applied
29 ☐☐ Psychological First-Aid
30 ☐☐ Transportation Only
31 ☐☐ Medications: ______ TYPE & AMOUNT
32 ☐☐ IV Fluids: ______ TYPE & AMOUNT
33 ☐☐ Other (explain) ______

[illegible]
B/P ___/___ ___/___
Pulse ______ ______
Resp. ______ ______

[illegible]
34 ☐ Equal
35 ☐ Unequal
36 ☐ Dilated
37 ☐ Constricted
38 ☐ Right Larger
39 ☐ Left Larger
40 ☐ No Reaction to Light

[illegible]

Developed for NHTSA
EHS-4N (73) NEW YORK STATE DEPT. OF HEALTH
RESEARCH COPY

Developed for NHTSA
EHS-4N (73) NEW YORK STATE DEPT. OF HEALTH
AMBULANCE COPY

Developed for NHTSA
EHS-4N (73) NEW YORK STATE DEPT. OF HEALTH
HOSPITAL COPY

EXHIBIT 1 (Continued)

GENERAL INSTRUCTIONS

I. A report is to be filled out for every ambulance run and for every patient treated and/or transported.

II. For all parties to obtain maximum benefit, it is essential that the report form be filled in as competely as possible.

III. To assist in completion of the new version of the Check List, the following points about its design are reviewed below:

A. The Items have been arranged into four areas according to the nature of the information requested –

1. Research (Cover Sheet)
2. Identification
3. Medical
4. Logistics

B. The information is recorded in three forms –

1. "Check off"
2. Numerical
3. Written

C. In two instances, more than one column of "check off" categories has been provided –

1. To allow up to three injuries to be recorded, together with the associated symptoms and sites, three columns of "check off" categories are provided for the applicable items under "Symotoms," "Sites," and "Suspected Injury." The information concerning the most severe injury should be recorded in the first (red) column under these three headings, the second most serious in the second (blue) columns, and the third most serious in the third (green) columns.

2. To allow for the recorded to distinguished between aid administered at the scene, and that administered en route, two columns are provided. That provided at the scene should be marked in the first (red) column, that administered en route in the second (blue) column, with that administered at both times to be marked in both columns.

A

PATIENT TAKEN FROM (Location):
Code
1 Expressway
2 Other Road/Street
3 Clinic/Dr's Office
4 Hospital
5 Nursing Home
6 Home
7 Place of Work
8 Recreation Area
9 Other – Specify under Comments

B

PATIENT TAKEN TO (Destination):
Code
1 Emergency Dept.
2 Hospital Bed
3 Out-Patient Dept.
4 Psychiatric Unit
5 Clinic/Dr's Office
6 Home
7 Nursing Home
8 Other – Specify under Comments

C

DRY RUN CODES
Code
1 No Emergency Health Care Needed
2 Cancelled by Requester
3 Patient Needed but Refused Care
4 Patient Went By Other Means (Explain Under Comments)
5 Prank
6 Victim DOA – Not Moved
7 Unable to Locate
8 Other (Explain Under Comments)

(A Dry Run is any run in which Patient is not transported.)

A B C

COMPLETE USING A #2 LEAD PENCIL
FORM ALL NUMERALS AS SHOWN.

0 1 2 3 4 5 6 7 8 9

D E F G

D

AMBULANCE REQUESTED BY:
Code
1 Citizen
2 Employer
3 Family
4 Fire Dept.
5 Hospital
6 Physician
7 Police
8 Other – Specify under Comments

E

NATURE OF CALL:
Code
1 Emergency
2 Non-Emergency
3 Stand-By
4 Dry-Run

F

CASE SEVERITY:
Code
1 Minor/Moderate
2 Severe/Critical
Apparent Death –
3 Before Ambulance Arrived
4 After Ambulance Arrived
5 En Route

G

DIFFICULTIES EN ROUTE:
Code
1 Severe Traffic
2 Adverse Weather
3 Mechanical Trouble
4 Tire Trouble
5 Involved in Accident
6 Unable to Locate
7 Other (Explain in 'Comments' Section)

EXHIBIT 2

EMERGENCY ROOM CHECK SHEET

CONFIDENTIAL REPORT (P.H. LAW 206 I–J)

DO NOT WRITE IN SHADED AREAS

1 12

1. ______ NAME OF HOSPITAL
______ CITY 13 16

2. ______ 17 28 PATIENT'S LAST NAME ☐ 29 ☐ 30 INITIALS MALE 1 FEM. 2 31 AGE

PATIENT'S ADDRESS

3. ______ STREET OR RFD NO.
______ CITY STATE
32 34 35 41

4. **Date and Time of Incident or Beginning of Difficulty**

MO DAY YR
42 47
48 51 ☐ AM ☐ PM

Date and Time Emergency Room Admission

MO DAY YR
52 57
58 61 ☐ AM ☐ PM

Time Seen By Physician in ER

62 66 ☐ AM ☐ PM

[illegible]

66 69 ☐ AM ☐ PM

5. **WHERE INJURY OR ILLNESS OCCURRED**

- ☐ 1. HIGHWAY OR STREET
- ☐ 2. HOME
- ☐ 3. PUBLIC BUILDING OR FACILITY
- ☐ 4. RECREATIONAL AREA
- ☐ 5. WORK
- ☐ 6. CIVIL DISORDER
- ☐ 7. OTHER ______ (SPECIFY)

70

6. **PATIENT ARRIVED BY:**

- ☐ 1. AMBULANCE ______ NAME OF AGENCY 72 75
- ☐ 2. POLICE AGENCY
- ☐ 3. PRIVATE AUTO
- ☐ 4. OTHER ______ (SPECIFY)

71

7. **If patient was transferred from another hospital state:**

______ NAME OF HOSPITAL CITY 76 79

8. **STATUS OF PATIENT ON ARRIVAL**

CARD 2 12 13

- ☐ 1. CONSCIOUS
- ☐ 2. SEMICONSCIOUS
- ☐ 3. UNCONSCIOUS
- ☐ 4. DOA (STATE APPARENT CAUSE IN # 9)

WAS PATIENT IN SHOCK?

☐ 1. YES ☐ 2. NO
14

ANY EVIDENCE OF ALCOHOL

☐ 1. YES ☐ 2. NO
15

ANY EVIDENCE OF DRUGS

☐ 1. YES ☐ 2. NO TYPE ______
16

9. **EMERGENCY ROOM IMPRESSIONS (DIAGNOSES) IN ORDER OF SEVERITY**

1. ______ 17 20
2. ______ 21 24
3. ______ 25 28

10. **CASE SEVERITY**

- ☐ 1. MINOR
- ☐ 2. MODERATE
- ☐ 3. SEVERE
- ☐ 4. CRITICAL

29

DETERMINED BY:

- ☐ 1. PHYSICIAN
- ☐ 2. REG. NURSE
- ☐ 3. OTHER ______ (SPECIFY)

30

11. [illegible]

______ 31 34

If a consumer product related injury – Describe product and sequence of events on back (See Instruction Manual for Definitions)

12. [illegible]

- ☐ 1. HOME
- ☐ 2. HOSP. ADMISSION
- ☐ 3. POLICE CUSTODY
- ☐ 4. MORTUARY–MORGUE
- ☐ 5 OTHER ______ (SPECIFY)
- ☐ 6. TRANSFERRED TO ANOTHER HOSPITAL

35

______ NAME OF HOSPITAL
______ CITY STATE 36 39

13. [illegible] TO EMERGENCY ROOM ARRIVAL?

- ☐ NONE 40
- ☐ CLEARED AWAY 41
- ☐ ARTIFICIAL RESP. 42
- ☐ ADMINISTRATION OF OXYGEN 43
- ☐ CARDIAC MASSAGE 44
- ☐ CONTROLLED BLEEDING 45
- ☐ SPINAL IMMOBILIZATION 46
- ☐ LIMB SPLINT 47
- ☐ TRACTION 48
- ☐ MORE CAREFUL MOVEMENT 49
- ☐ OTHER ______ (SPECIFY) 50
- ☐ EARLIER NOTIFICATION 51
- ☐ QUICKER RESPONSE 52
- ☐ RADIO COMMUNICATION BETWEEN AMBULANCE AND EMERGENCY ROOM 53
- ☐ SPECIAL EQUIPMENT ______ (SPECIFY) 54
- ☐ SPECIAL TRAINING ______ (SPECIFY) 55

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